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A STUDY OF THE LUNG INVOLVEMENT IN HUMAN ASCARIASIS.*

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In 1916 the discovery was made that ascaris ova hatch in the small intestines, migrate almost immediately through the intestinal wall and, through the blood stream, heart, and liver, reach the lungs. From the capillaries of the lungs, they work their way out into the alveolar spaces and thence through the bronchioles, bronchi, and the trachea to the throat. From the pharynx they enter the intestines by way of the esophagus and stomach. (Stewart, 1916.) This work was later confirmed by others. (Ransom and Foster, 1919; Yoshida, 1919.) It has also been shown that if the host is a suitable one for the ascaris, the young worms will settle in the intestines and develop to maturity.

The lung pathology in experimental animals shows bright red hemorrhagic spots at points where the larvae break out. One entire lobe of lung may be involved, or all lobes of both lungs. It may resemble either lobar or lobular pneumonia. In some specimens tissue eosinophilia is very marked. There is an extensive literature on the pathology in this condition. Any one interested is referred to that for detailed descriptions.

Since the above discovery and publications, doctors in endemic areas have occasionally considered that pulmonary conditions in children were due to ascaris larvae migrating through the lungs. Some cases of actual pneumonia have been assigned to this cause. Pig ascaris (*A. suum*) are very closely related to *A. lumbricoides*. Young pigs in endemic areas of pig ascaris (Ransom, 1919) die of a disease known as "thumps," the symptoms of which are similar to a lung condition produced experimentally in pigs by ascaris larvae migrations. Since the pig ascaris can produce a pneunomia in pigs, by analogy it would seem reasonable that human ascaris might produce a similar condition in the human.

There are a few experiments on human beings recorded. A volunteer, a man thirty-two years of age, who had been free from ascaris infestation for at least twenty years, took by mouth a small number of ascaris ova, about one-third of which contained mature embryos. (Lutz, 1888.) It was estimated that about one hundred viable ova were swallowed. Early in the experiment Lutz states the man suffered from acid dyspepsia, with vomiting and a slight fever, and, in addition, an unusually severe bronchitis developed.

A German physician, Mosler (quoted by Ransom, 1919, and Steiner, 1920) fed ascaris eggs in numbers up to several dozen to healthy children of various ages. In some of the cases Mosler observed that the children, a few days after the eggs were fed to them, suffered from fever and difficulty in breathing. He did not think these symptoms were due to the experiment. However, since Stewart's discovery and experiments by others, it seems possible that the breathing difficulties experienced in both Lutz's and Mosler's cases were due to the ascaris larvae migrating through the lungs.

A Japanese worker (Koino, 1922), experimented upon himself and his brother. He fed to his brother, a healthy man twenty-one years old, 500 embryonated eggs of *Ascaris suum*. He himself ingested several weeks later about 2,000 embryonated eggs of *Ascaris lumbricoides*. The results obtained by ingesting the ova are fully described in his report. From one to two weeks after the ingestion of the ova, both subjects showed respiratory symptoms varying in degree and accompanied by

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toxemia. Koino, having swallowed the greater number of eggs, showed severe respiratory symptoms; also, upon examination of his sputum, many ascaris larvae were found. Fifty days after the test feeding, 667 immature ascarids were recovered from the feces following anthelmintics. The size of the worms varied from 30 to 80 mm.

There are a few cases with lung symptoms reported in the literature. A case was reported (Steiner, 1920), of a child six years old which had three attacks of fever and difficult breathing lasting for two to three days each. For about a month after these attacks the child passed a few immature ascarids occasionally, generally after the administration of an anthelmintic. In Samoa (Armstrong, 1923-1924), cases are frequently seen of the broncho-pneumonic type of ascariasis in children. A case was described (McKibben, 1919) with typical symptoms of pneumonia but with no positive findings. This case on treatment passed 370 parasites more than an inch and a half in length and many smaller than this.

Since an ascaris pneumonia occurs in pigs in areas where pig ascaris is endemic, and since it has been produced experimentally in many laboratory animals and also in man, the question arises as to the amount of lung involvement that we may get in human infestations brought about in the usual way.

Time, Place, Economic and Sanitary Conditions, Weather, and Cases Selected

For the purpose of this study in the summer of 1930, two villages were selected in Wise County, a mountainous district in Virginia. The staff carried on field investigations from June 24 to August 12, 1930. These villages, Ramsey and Hawthorne, were selected because two years before Dr. W. W. Cort and his co-workers (Cort, Otto, and Spindler, 1930), made a survey of ascaris distribution in southwest Virginia, and found the inhabitants of these villages more heavily infested than other groups studied.

The town of Ramsey had been a sawmill camp and the people remaining there made a living as best they could. Some of them worked in the mines and others at odd jobs that they could pick up. Some of them had tracts of land on which they raised many of their own vegetables and some grain. Hawthorne was a mining town, the houses of which were owned by the mining company and rented to the employees. Most of the houses were in a bad state of repair. These people also had gardens from which they obtained some vegetables.

The average income for these families was about sixty dollars a month. That had been the average income for the last two or three years. Out of this the man had to pay his house rent, averaging about six dollars per month, feed, and clothe his family. Boys above fifteen years of age usually worked in the mines or at odd jobs, thus increasing the family income, but many families, with two parents and five or even six children, depended solely upon the income of the head of the house.

The sanitation in both towns was much the same. Most of the houses had privies in connection with them, but they were on an average of thirty or more yards from the house and, in some cases, there was no path leading from the house to the privy, which meant that the privy was seldom used.

The houses usually consisted of two or three rooms, seldom four. There were often two double beds in each bedroom. In some cases there were also one or two beds in the kitchen. Only one house in the group was screened at all adequately. The houses were usually built on stilts. Often one side of the house was considerably above the ground. The children played under the house and it was frequently used as a place for defecation. Fecal material was often seen under these houses and sometimes a child would be seen there in the act of defecating. The ground beneath the house was generally moist and shady and made an ideal place for the embryonation of ascaris eggs, and a likely place for the children to pick them up after they were embryonated. Fecal pollution was often seen about the back porch and in other parts of the yard. Cort and his co-workers, two years before, found seventy-three ascaris and two trichuris eggs with motile embryos in three grams of soil samples taken from the yard of one of the families included in this study. In size the families ranged from one to seven children.

Weather conditions are important in a study of this kind. The summer was dry over the most of the eastern section of the United States but the Ramsey-Hawthorne area had more rain than most sections of Virginia and the rainfall was rather evenly distributed through the

summer. While the rainfall was less than the average for that section, which may have meant a retarded embryonation of ascaris eggs, at the same time it lacked the hard dashing rains which, in ordinary years, would have washed away much of the surface pollution. It is possible that a season with more rainfall and moisture would have produced heavier infestations by increased embryonation or by limiting the distribution of the seeding of intestinal ova, and also limiting the playground of the children to these seeded areas, thus producing heavier doses of embryonated ova.

Within these two towns, ninety-seven children, ages ranging from six months to fourteen years, and two adults, representing twenty-seven families, were chosen for study. Eighty-six per cent of the subjects studied were under twelve years of age.

Investigative Technique

Quantitative parasitic ova counts were made at the beginning of the study and from three to four weeks later on all cases studied. Additional counts were made on some of the individuals. A large increase in ova might have been coordinated with a previous severe bronchitis or pneumonia. For counting intestinal parasite ova the displacement option (Stoll and Housheer, 1926), of the Stoll dilution egg counting technique (Stoll, 1923), was used. In making the counts, a small drop (0.075 c.c.) was used on a 2x3 inch glass slide with a 22x30 mm. cover slip. The constituency of the stools was classified as in the study of Cort and his co-workers. Two counts were made on each stool sample by different members of the staff and the average results recorded.

The Baermann test (Baermann, 1917; Cort, Ackert, Augustine, and Payne, 1922), has been of service in isolating small motile larvae of certain nematodes that would pass screens. It was used on the stools in this study in the hope that if small viable ascaris larvae were being passed they might be found in this way. Numbers 20 and 40 screens were used to get larger larvae and immature ascarids.

It was impossible to obtain sputum from the smaller children, but when there were positive lung findings in older children and adults, all the sputum was obtained when possible. This was examined carefully for ascaris larvae, stained for tubercle bacilli, and cultured for other organisms.

White blood cell and differential counts were made to see if any help could be obtained from the eosinophiles in diagnosing ascaris lung involvement. Two hundred cells were counted in each case. Although it was realized that many of the cases with larvae migrations would already have a worm burden in the intestines and, therefore, most probably have an eosinophilia, it was thought that some help might be had on very young children or in children just moving into an endemic ascaris area by a differential count. The differential blood counts were made from one to ten days after the first stool specimen and some ten or more days before the second stool specimen.

Treatment, with careful screening of stools, was planned in the hope that immature ascarids corresponding in growth to the period of time elapsing since a previous pulmonary condition would be found. This condition would be suggestive, at least, that ascaris migrations had caused the lung condition.

Histories were taken on all the cases selected for study and physical examinations given at the beginning of the study. Chests were re-examined and other examinations were made as indicated during the progress of investigation.

Findings

The histories taken on these cases gave, with the exception of the passage of worms, essentially nothing more than would be expected from a similar group of subjects who had not had the history of worms. Practically all the cases gave a history of passing worms, their first appearance coming usually when the child was two years of age. Forty-four per cent of the cases gave a past history of sore throat and 9 per cent of pneumonia. Thirty-one of the ninety-nine, or 31 per cent, gave the history of enuresis after the age of two years. This high incidence may, in some cases, be attributed to the presence of worms but is much more likely due to carelessness of habits and poor training. There were about as many families who gave the history of enuresis not being present as did, and when enuresis was present, the majority of the children of that family were offenders, regardless of age.

The following were the principal findings in the physical examinations: Tonsils were noted in each case. Three had had tonsils removed, forty-eight showed tonsils even with pillars or sunken, and forty-eight had tonsils

projecting beyond the pillars. In five of the latter, the tonsils touched the uvula. In forty-six cases, one or more carious teeth were noted. The lymph nodes did not show any generalize l enlargement.

At the first examination forty-one showed rhinitis, and during the next six weeks, twenty-six additional cases developed this condition, which made a total of sixty-seven out of ninety-nine, or 68 per cent. Rhinitis occurred chiefly as multiple cases in families, indicating the infectious nature of the inflammation. Seven of the cases had a rhinitis all summer; other cases lasted anywhere from one to nine days. In twenty-nine cases the rhinitis was accompanied with a cough. Nine of those showing cough with rhinitis had physical signs in the chest, such as scattered rales. The ages in this group varied from six months to eleven years. These cases had a clinical picture of upper respiratory infection.

Nine cases, or 9 per cent, had a cough, which, together with the coughs with rhinitis noted above, made a total of 38 per cent with cough.

Five in a family of nine, the mother and four children, ages seven, ten, eleven, and thirteen, had a cough at the same time. Two other children, ages two and four, had rhinitis but no cough. Only the father and a small baby escaped the infection. This family appeared to have an upper respiratory infection infecting almost the whole family at the same time. The entire family was poorly nourished and mentally dull. The mother had a definite pneumonia. The four children with cough were up and around but coughed a good deal and raised much sputum. Rales were found intermittently. The sputum of the five was repeatedly examined for ascaris larvae with negative results.

Four other cases belonged to another family, children aged six, nine, eleven, and fourteen, respectively. The cough was hacking in character, occurring chiefly at night for a few nights. Chest findings were negative. No sputum from these patients was obtained. There was a history of tuberculosis in both the mother and father. All of this group with chest f ndings or cough with chest findings showed ova in the stool.

One case, age six, showed signs of asthma and rhinitis the whole six weeks of observation. The asthma may have been due to the accompanying sinusitis that was present.

Diarrhoea occurred in thirty cases, the duration of which varied from one day to a mild diarrhoea lasting for six weeks. The severer diarrhoeas were in the smaller children. Sixteen out of the thirty were ages two and under. Seven of these sixteen had no ova in the stools. All the diarrhoea cases five years of age or under gave a history of drinking milk. The milk supply was produced locally, usually being obtained from neighbors. There were no means of keeping milk cold as refrigeration was not present in a single household. In most of these cases the clinical picture was the same as that of the ordinary summer diarrhoeas. Boiling of milk and the use of buttermilk helped somewhat in stopping the diarrhoeas. The most obstinate cases were cleared up by the substitution of evaporated milk for the cows' milk.

Two cases, ages two and three, whose complaint was that of loss of appetite, lassitude, irritability, drowsiness, inactivity off and on, with some days better than others, and who showed numerous ova with nothing more to show for the symptoms, had their milk supply changed to evaporated milk with the result that the symptoms cleared up.

Vomiting was present in fourteen cases. In twelve of the cases, vomiting could be explained by an acute infection or associated with a severe diarrhoea. The other two cases vomited once each and expelled worms.

Underweight and undernourishment have been attributed to ascaris infestation. The weight and height of sixty-six out of the ninety-nine cases studied were obtained. The majority of these were underweight but the economic factor must have had much to do with this condition.

TABLE NO. 1

SHOWING NUMBER OF CHILDREN IN EACH AGE GROUP STUDIED, THE NUMBER POSITIVE FOR ASCARIS EGGS IN EACH GROUP, TOGETHER WITH THE AVERAGE NUMBER OF EGGS FOR ALL CASES AND FOR ALL POSITIVE CASES IN EACH GROUP.

AGE GROUP	NO. IN GROUP	NO. POSITIVE FOR ASCARIS OVA	EGGS PER GRAM OF FECES	
			AVERAGE FOR ALL CASES IN GROUP	AVERAGE FOR ALL POSITIVE CASES IN GROUP
0- 4	31	19	23,752	38,752
5- 9	43	40	44,084	47,180
10-14	23	23	35,382	35,382

Other symptoms and signs, which can be found over a period of time in any observed group, appeared in smaller percentages.

The figures in Table No. 1 are from the counts made on feces collected the last of July. The table shows what a large per cent of the cases studied had a worm burden in the intestines. Since each ascarid roughly represents 1,000 eggs per gram of feces (Brown and Cort, 1927), the average number of worms for the positive cases would be around thirty-five for the 10-14 age group and forty-seven for the 5-9 age group.

None of the cases under two years of age showed any ova in their feces, although one of these, age fifteen months, passed a round worm which was reported by the mother of the child during the period of investigation. Several of the children who had ascaris ova on the first count failed to show them on the second count, and a number who did not have ascaris ova on the first count showed them on the second count.

TABLE NO. 2

SHOWING AVERAGE ASCARIS OVA COUNTS IN ALL CASES POSITIVE IN BOTH FIRST AND SECOND COUNTS.

AGE GROUP	NO. POSITIVE	AVERAGE ASCARIS OVA IN ONE GRAM OF FECES	
		FIRST COUNT	SECOND COUNT
0– 4	17	32,823	40,982
5– 9	36	44,181	52,422
10–14	21	29,529	38,471

Table No. 2 shows the average egg increase of the cases positive on both the first and second counts. The first count was on feces collected the last of June and early July, while the second represents stools collected the latter part of July.

The highest individual count was on a child age ten who had 235,200 ova per gram of stool. The second highest was on a child age five who had 213,600, and the third was a child age eight who had 213,200. The fourth and fifth were on children ages seven and four with 206,000 and 201,000, respectively. In the above, the second and third were a result of the first count while the other three were found in the second count.

In this study the heaviest average infestations were in the ages from five to nine, inclusive, and the average number of eggs increased as the summer went along. A number of these children had passed worms during the course of study, but, in spite of this, most of them showed an increase in ova counts. This would suggest that there is a constant turnover in worms with perhaps an excess of the intake over the loss during the summer months. This ascaris turn-over is in general agreement with the findings of Otto (1930) on the children in these two villages. Keller (1931) reporting on work done in an institution near Nashville, found all the ascarids disappearing from children, 6.5 per cent of whom were infested, in fourteen months time. These children were living in a good sanitary environment.

The average eosinophilia for the eighty-four included in Table No. 3 is 10.19. This is a

TABLE NO. 3

SHOWING THE AVERAGE DIFFERENTIAL COUNT BY AGE GROUP ON ALL CASES POSITIVE FOR ASCARIS OVA.

AGE GROUPS	AVERAGE AGE	NO. OF INDIVIDUALS COUNTED	NEUTROPHILES	LYMPHOCYTES	EOSINOPHILES	OTHERS
0– 4	2.95	21	41.3	47.8	9.57	1.33
5– 9	6.78	41	39.0	49.0	10.5	1.5
10–14	11.7	22	42.0	46.4	10.2	1.6

higher eosinophilia than that shown in a recent study on 107 white and sixty negro patients in Tennessee (Keller, Casparis, and Leathers, 1931), and the ascaris ova count average in this series is less than that in the Tennessee study.

The above group gives the more extreme findings. Case 91, with the second highest ascaris ova count in the entire series, showed only 2 per cent eosinophiles, while case 42, with a comparative high ascaris ova count, also had 2 per cent. Case 38, with a very low ova count, had 30 per cent eosinophiles, the highest recorded in the series, and case 60, who had no ova on first count and only a few in the second, had an eosinophilia of 25 per cent. While only nine of the extreme cases were selected for the table, there were others that ran much like these. For the group, however, there is a definite eosinophilia and this must be associated with the ascariasis. It should be mentioned that an individual with low ova count

TABLE No. 4

SOME OF THE EXTREME CASES SHOWING LACK OF RELATIONSHIP BETWEEN EOSINOPHILE COUNTS AND WORM BURDENS.

CASE NO.	AGE	SEX	ASCARIS OVA PER 1 GRAM FECES		DIFFERENTIAL WHITE CELL COUNT			
			FIRST COUNT	SECOND COUNT	NEUTROPHILE	LYMPHOCYTES	EOSINOPHILE	OTHERS
2	5	M	50,800	188,200	30	48	21	1
38	7	M	2,000	600	32	37	30	1
42	6	M	112,800	.....	48	50	2	0
48	7	M	14,600	55,200	49	30	21	0
60	6	M	.....	400	21	52	25	2
66	2	M	8,200	22,000	21	55	24	0
72	6	M	42,800	50,800	28	67	5	0
75	14	F	83,100	73,600	44	49	5	2
91	5	F	213,600	107,400	42	54	2	2

and high eosinophile average might have a large number of sexually immature or male worms, or ascaris larvae might be migrating through the lungs, or there might be some other eosinophile producing condition.

INTENSIVE STUDY

Nine of the cases were selected for special study during the last three weeks. Five cases were selected which had had positive lung findings. Two of the five cases with positive lung findings were adults, mothers of children with heavy infestations. Both of these adults had had lung complications during the summer; one a pneumonia in the lower right lung and the other a bronchitis. This latter adult gave the history of having had tuberculosis. During the study, she had an attack of what appeared to be broncho-pneumonia. Acute symptoms lasted about a week. The cough, with the production of sputum, lasted until the end of the study. The sputum on repeated examinations showed no ascaris larvae or tubercle bacilli and fecal examinations showed ascaris ova but no larvae or mature ascarids were passed. Eosinophiles ranged from 9.7 per cent to 6.3 per cent, the latter being the count after all active symptoms had subsided.

Of the three children in this special study who had had lung findings before their selection, one was a child, age two, (case 32) who had been quite ill with vomiting, diarrhoea, and bronchitis. On July 7th, high pitched musical, crackling, and crepitant rales were heard over the chest and this continued for a period of six days.

The second child with positive lung findings in the chest was case 5, who on July 18th had a cold with severe coughing. A few whistling rales were found on the left side anteriorly at the base of the lungs. On the right side, whistling and crackling rales were heard in the anterior sixth and seventh inner spaces. The rales had cleared up the next day, but the cough continued for several days.

The third child with lung findings was case 60, who had high pitched rales in upper chest on both sides, a loose cough with expectoration, and a nasal discharge present during the whole period of observation. This boy had passed four immature ascarids at the beginning of the sickness.

The other four children selected had had no symptoms from the beginning of this study, the 24th of June, until the beginning of this special study, the 21st of July, but they were living in such indescribably filthy conditions that they were included in this special study as being likely subjects of rather frequent migrations. One of the cases carried a very heavy load of mature ascarids, having an ascaris ova count of 213,600 in the early part of July.

These nine cases were seen every day by members of the staff and, if any variation from the normal was noted, the individual was checked over carefully. Where sputum could be obtained, it was examined for tubercle bacilli, cultured for other bacteria, and each specimen was examined carefully for ascaris larvae. All the feces passed during this period were collected and Baermann tests were done to see if ascaris larvae could be obtained. The feces were then run through No. 20 and No. 40 sieves to get out immature and mature ascarids.

Differential counts on the white cells were made each week. Quantitative stool counts were made on each case at least once during this period.

X-ray examinations were done on five of the children, two of whom had positive lung findings during the study and three who had none.

In all of these nine cases, no ascaris larva was found in the feces. Motile larvae should have been recovered by the Baermann. Dead larvae might have passed through the finer

sieves. The smallest ascaris found in this group of nine was 57 mm. in length.

Most of these cases passed some mature ascarids before treatment and, with the exception of the two-year old child, all passed ascarids after treatment. Three of the four showing no lung symptoms passed larvae of *Strongyloides stercoralis*. One had no ova; two had ascaris ova only; three had ascaris ova and one other type of intestinal parasite ova; one had ascaris ova and two other types; and one had ascaris ova and three other types. One of those showing only ascaris ova had pin worms, which were found on screening the feces. One of the cases showing ova of two parasites and both of those showing the three and four types of ova also had strongyloides.

The report of the roentgenologist on the five cases X-rayed is as follows:

Case No. 5—Calcified lymph nodes and inflammation are seen in both hila. Calci e l tubercles appear along left ascending bronchial branches, but few are seen in lower bronchial branches on left and upper bronchial branches on right. This patient has slight hilum and bronchial tuberculous infection mostly healed.

Case No. 17—Calcified lymph nodes in and around both hila along bronchial branches are found both above and below. Hilum and bronchial infection tuberculosis or the sinus infection or both will account for appearance.

Case No. 60—Scar tissue is seen in hilum with calcified lymph nodes but no details in lungs can be made out. Patient did not hold breath—both films blurred. Picture can be accounted for by asthma and hilum tuberculosis or chain infection from sinus involvement.

Case No. 81—Patient did not hold breath but there is an inflammatory deposit in hilum with few calcified lymph nodes. The findings may be due to hilum tuberculosis involvement or excessive sinus infection.

Case No. 91—On right side there is marked inflammatory thickening in and about right hilum. Numerous calcified lymph nodes are seen in and around hilum. An occasional calcified tubercle was seen along descending branches. Left lung shows irregular area, somewhat blurred, visible through third and fourth front interspaces due to some form of infection. Location not characteristic of tuberculosis, but may easily be accounted for as interstitial tubercular area. Certainly seems to be hilum and bronchial tuberculous infection.

Treatment was attempted on more than half the cases but, due partially to lack of cooperation on the part of the patients and partially to the drug used, the results were unreliable.

Summary and Conclusion

Histories on ninety-nine persons studied, 86 per cent of whom were under twelve years of age, with the exception of the passing or vomiting of worms, gave nothing essentially different in their histories from what would be expected in a similar group of children in the same economic and social stratum. Enuresis was reported after two years of age in 31 per cent of the cases.

Physical examinations during the period of study showed 68 per cent with rhinitis and 38 per cent with cough. One child and two adults developed pneumonia. Repeated examinations of sputum obtained from the pneumonias and those with cough failed to show ascaris larvae.

Diarrhoea occured in thirty of the patients, seven of whom had no ascaris larvae in the stools. Vomiting was present in 14 per cent.

The average ova counts averaged higher on the second count, which was made from stools collected approximately three weeks later than the first. The heaviest infestations were in the five-nine years age group.

While the eosinophilia varied in the different cases, the eosinophiles averaged 10.19 per cent and seem to be definitely associated with ascariasis.

Intensive studies on nine cases gave no proof of lung migrations. Two cases with pneumonia showed no ascaris larvae in the sputum and Baermann tests and screens failed to get any ascarids excepting those that might have passed the lungs before this study began. X-ray examinations on five of the cases showed conditions which might have been accentuated by ascaris larvae migrations, but could be accounted for in other ways.

Some of the bronchitis found in this study may have been due to ascaris larvae migrating through the lungs but it can be explained by an upper respiratory infection, such as the common cold, which was present at the time of the examinations. No positive evidence was obtained that the lung conditions found were due to ascaris migrations.

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DIFFICULTIES ENCOUNTERED IN THE ETIOLOGICAL DIAGNOSIS OF AORTIC REGURGITATION.*

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and
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This study is based on an attempt to properly evaluate the methods commonly available for the formation of an etiologcal diagnosis in cases of pure aortic regurgitation. Prior to the advent of the Wassermann reaction in the early part of this century little emphasis was placed on the part played by syphilis in the production of the condition. Medical opinion at once inclined to that disease as the causative factor in the great majority of cases. However, in late years we have come to a realization of the fact that in many patients with aortic regurgitation it is impossible to obtain evidence by either clinical or post-mortem studies that incriminates syphilis as the etiological agent. Although it remains obvious that syphilitic infection is the undisputed cause in the greater number of instances, sclerotic processes of obscure origin involving the aortic valve are claiming more and more attention.[1, 2, 3, 4, 5] Although the literature of the past decade reiterates the need for accurate diagnosis in these cases little stress seems to have been laid upon the practical difficulties attendant upon such effort. An attempt will be made to outline briefly some of the major problems; to formulate approximately the degree of accuracy that may be anticipated from simple clinical procedures, and to discuss the aid furnished by more exhaustive studies of aortic regurgitation.

No effort has been made in this study to ascertain the relative incidence of pure aortic regurgitation as compared with single or combined lesions of other valves. Insufficiency of the aortic valve alone has been reported by various authors as occurring in 25,[6] 13,[7] 14,[8] and 22[9] per cent of all valvular lesions.

Aortic regurgitation has been said[10] to result from the following conditions: (1) Rheumatic endocarditis with ulceration, fibrosis, and contracture of the valve leaflets; (2) syphilitic

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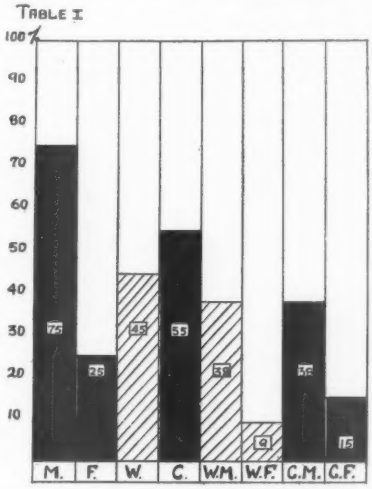
ulceration and erosion of the valves or dilatation of the aortic ring in aneurysm of the ascending aorta; (3) arteriosclerosis of the aorta when there is imperfect closure of the leaflets; (4) rarely hypertensive heart disease with functional dilatation of the aorta and aortic ring; (5) occasionally severe anemia; and (6) rarely trauma. To these factors may be added as rare occurrences, congenital malformations, and acute bacterial invasion of the valve leaflets.[11]

It is obvious that all of these conditions must be kept constantly in mind in a consideration of the cause of each case of aortic valve failure. There is but rarely any quality in the sound of the regurgitant murmur which aids us in the determination of the primary cause by which it has been initiated. The etiology of the underlying process must be found through a study of secondary considerations. These include a history or the finding on physical, laboratory, or X-ray examination of evidence of associated disease in the heart or elsewhere in the body. There may be a complete absence of such confirmatory data, or such a confusion of associations as to leave us in utter bewilderment.

Material for this study has been obtained from the records of 125 patients who have been admitted to the University of Virginia Hospital during the past few years. These patients were all diagnosed as having *pure* aortic regurgitation. The diagnosis was based upon the presence of the diastolic murmur characteristic of that disease.[12] No case was utilized in which aortic stenosis or combined valvular lesions were demonstrable, nor were cases included in which the structural diagnosis was made less certain by the presence of a supposed Austin-Flint murmur.

These 125 cases were arbitrarily divided into three etiological groups—all the result of syphilitic, doubtful, and rheumatic factors. The criteria employed in the formulation of each diagnosis were the usual factors incident upon a diagnosis of the various conditions causing aortic valve failure. In the syphilitic group a suggestive history, a positive blood or spinal fluid Wassermann reaction, or the evidence of syphilis in the aorta or elsewhere in the body were deemed sufficient to effect a tentative diagnosis. A history of rheumatic fever in younger persons and in the absence of syphilis was considered as an indication of the rheumatic origin of the disease. The group designated as "Doubtful" consists of a *few* cases in which the underlying factor was probably syphilitic or rheumatic infection, and a much *larger* group of cases to which no definite causative factor could be ascribed. We wish to direct particular attention to this doubtful group which comprises over one-third of the total cases in the series. In it are included those instances of aortic regurgitation so frequently characterized as being of arteriosclerotic origin. It would seem from a review of the recent literature[2, 3, 4, 5] that postmortem studies often fail to confirm clinical diagnoses of arteriosclerotic aortic regurgitation, and pathologists apparently differ widely in their interpretation of the atheromatous changes which may be found involving the aortic valve. Failing to demonstrate syphilis or rheumatism as a cause it appears possible that we have become too prone to ascribe to arteriosclerosis a major role in the production of an appreciable number of aortic valve defects.

A partial analysis of the 125 cases which have been chosen for study appears in the accompanying tables. Patients were distributed according to sex and race as shown in Table I. The male to female ratio of 3:1 is



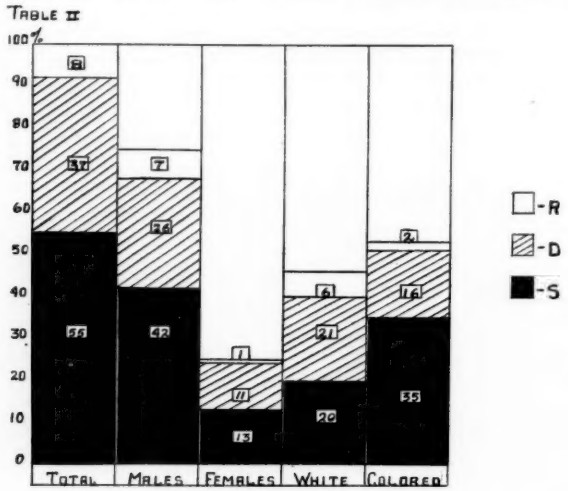
SEX AND RACE INCIDENCE IN AORTIC REGURGITATION

M., Male; F., Female; W., White; C., Colored; W. M., White Male; W. F., White Female; C. M., Colored Male; C. F., Colored Female.

in accord with the observations of other writers.[13] The ratio of colored to white patients is 5:4, a relationship which increases to 5:1

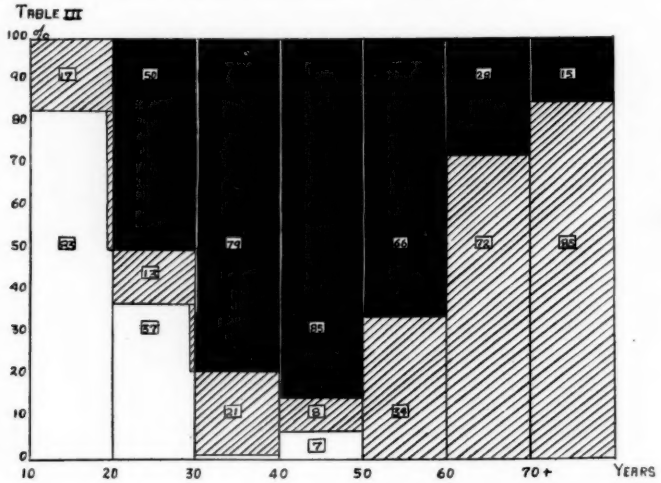
when corrected for the proportion of colored to white admissions (1:4) at this hospital.

An etiological grouping according to total number of cases, sex, and race (Table II) analysis of 327 cases or aortic regurgitation Harmer[14] concluded that 50 per cent were the result of previous syphilitic infection; 17.5 per cent of rheumatic origin; and 32.5 per cent of



ETIOLOGICAL DISTRIBUTION OF 125 CASES OF AORTIC REGURGITATION
S., Syphilitic Group; D., Doubtful; R., Rheumatic.

forms an interesting contrast. It is at once obvious that syphilis is the predominant factor in the production of aortic regurgitation, representing 55 per cent of the patients in this uncertain or mixed etiology. It will be observed that a syphilitic orign of the disease is almost twice as common in colored as in white patients.



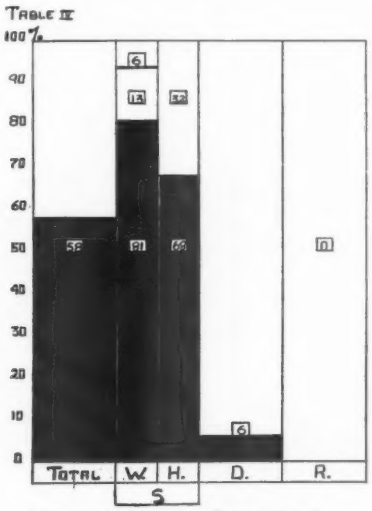
AORTIC REGURGITATION -- ETIOLOGY BY AGE INCIDENCE
S., Syphilitic Group; D., Doubtful; R., Rheumatic.

series. Rheumatic infection seems clearly to account for 8 per cent, whereas the remaining 37 per cent comprise the group previously referred to as of doubtful causation. In an

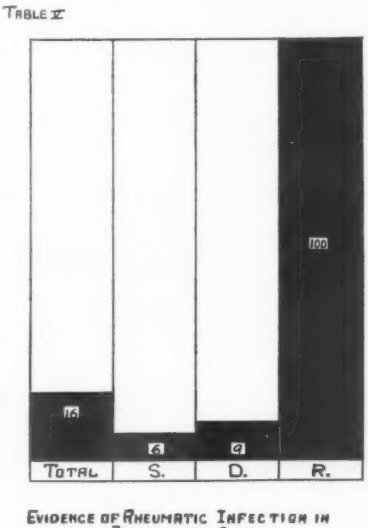
In Table III the age distribution of etiological groups is charted in percentages of total cases appearing in each ten year period. The tendency of rheumatic infection to cause de-

monstrable valvular disease in early life, the menace of syphilis in the middle decades, and the advent of sclerotic and degenerative changes coincident with old age are graphically portrayed. In approximately 10 per cent of the total number of cases studied there was evidence of both syphilitic and rheumatic infection as possible factors in the production of the valve defect. These cases account for those doubtful groups occurring in the earlier age periods.

omitted or lost in 6 per cent of cases. The spinal fluid Wassermann examination was done in thirty-seven patients and was positive in eight, four of these having a negative blood serology. In the syphilitic group of sixty-nine patients, 68 per cent gave a history of syphilis, and 48 per cent a history of primary or secondary lesions. These figures stress eloquently the value of a careful history and routine serological examinations in patients who present evidence of aortic disease.



EVIDENCE OF SYPHILITIC INFECTION IN ETIOLOGICAL GROUPS



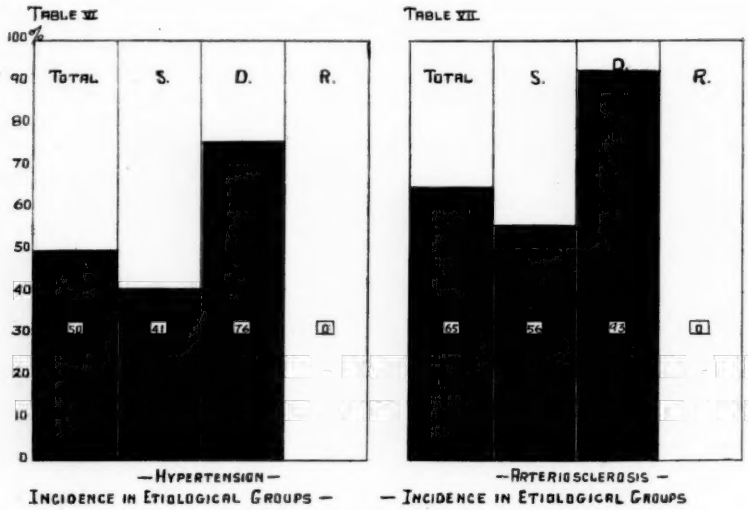
EVIDENCE OF RHEUMATIC INFECTION IN ETIOLOGICAL GROUPS

W., Wassermann; H., History of Syphilis; D., Doubtful; R., Rheumatic.

Table IV deals with the evidence of syphilitic infection in the total series and in the various etiological groups. There were indications very suggestive or conclusive of syphilis in 58 per cent of the 125 patients studied. Of these, three patients with direct evidence of syphilis are placed in the "Doubtful" category, and constitute the 6 per cent listed in that group. One patient, aged fourteen, had congenital syphilis, a strongly positive blood Wassermann reaction, and a definite rheumatic history. The others were men in the middle age period, one in whom an aortic regurgitation was observed concomitantly with the occurrence of a chancre, and another who developed a primary lesion five years after the appearance of the aortic defect. That reinfection in syphilitic patients is a rarity has been noted elsewhere.[15] In the syphilitic group, the blood Wassermann reaction was positive in 81 per cent, negative in 13 per cent, and

Table V presents the percentage history of rheumatic infection elicited in the various etiological groups. It will be noted that 16 per cent of the total series furnished evidence of a rheumatic diathesis. All cases in the rheumatic group had had rheumatic fever.

The incidence of hypertension and arteriosclerosis in the total number of cases and in the three diagnostic groups is illustrated in Tables VI and VII. A systolic blood pressure of 170 mm. Hg. (or over), or a diastolic blood pressure of 100 mm. Hg. (or over) was arbitrarily conceded to be indicative of hypertension. It will be observed from Table VI that an elevation of blood pressure was found in 50 per cent of the total cases; in 41 per cent and 76 per cent of the syphilitic and doubtful groups, respectively, and in none of the rheumatic cases. Likewise, that arteriosclerosis (Table VII) was present in 65 per cent of the total number; in 56 per cent and 93 per cent



S., Syphilitic; D., Doubtful; R., Rheumatic.

of the syphilitic and doubtful groups respectively; and in none of the rheumatic group. These percentages appear slightly higher than those reported by other observers.[16, 17] The high incidence of hypertension and arteriosclerosis in patients with aortic valvular disease must be constantly borne in mind. The primary role played by these factors cannot be ascertained with any degree of accuracy in individual cases, although their effect on the progress of the disease is necessarily one of importance. That hypertension and arteriosclerosis present higher percentages in the doubtful than in the syphilitic groups is partially explained by the relative ages of the patients in these two classes.

The value of routine X-ray study as a diagnostic aid in aortic regurgitation has been shown elsewhere.[18, 19, 20, 21] Of the 125 patients observed in this series, sixty-six, or 53 per cent were examined by means of the fluoroscope and teleroentgenogram. The results of this study, in an abridged form, appear in Table VIII. Although statistical averages are misleading, particularly when applied to individual cases, it is thought that the values obtained in measurements of the aorta are significant. In our experience, the shape of the heart gives more information than a determination of its size which is dependent upon the duration of the disease, the extent of the valve defect, and other factors such as hypertension, the patient's occupation, and possibly the presence of chronic nephritis. The study of the contour of the aorta as observed by fluoroscopic examination is obviously a procedure of great value.[22]

TABLE VIII

SIXTY-SIX PATIENTS WITH PURE AORTIC REGURGITATION STUDIED BY TELEROENTGENOGRAM

	Number Cases	*Average Cardio-Thoracic Ratio*	*Average Width Great Vessels*
Syphilitic	44	59%	8.1 cm.
Doubtful	20	60%	6.9 cm.
Rheumatic	2	54%	4.7 cm.

Electrocardiographic studies have, up to the present time, furnished no direct aid in a determination of the etiology of aortic regurgitation.

SUMMARY AND CONCLUSIONS

One hundred and twenty-five patients with pure aortic regurgitation have been studied clinically with particular reference to the cause of the underlying valve defect. In sixty-nine cases (55 per cent) the aortic lesion was thought to be due to syphilis; in ten (8 per cent) to previous rheumatic infection. In forty-six instances (37 per cent), a causative factor could not be accurately determined.

The value of an etiological diagnosis in cases of aortic regurgitation cannot be doubted. The importance of a careful history is emphasized as an indispensable factor in the majority of syphilitic and rheumatic cases. Physical examinations should be completed with particular regard to the presence of conditions which might be associated etiologically with

the aortic defect. Exclusive of the serological tests for syphilis and X-ray studies of the heart further procedures are of little value.

At least one-third of all cases of pure aortic regurgitation present difficulties in diagnosis which are as yet not overcome by known clinical or post-mortem methods of study. By applying the ordinary methods of examination the average physician may effect an etiological analysis of this disease in a measure equal to that attained by more highly trained workers.

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THE TREATMENT OF POST-OPERATIVE INTESTINAL OBSTRUCTION.*

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This paper is based on a series of eight consecutive personal cases of post-operative intestinal obstruction which occurred at Stuart Circle Hospital in a period of three years and seven months.

The condition is one of great interest. After it is definitely established, it is invariably fatal unless relieved. It usually follows or is a part of the clinical entity of severe cases of appendicitis. This was true of six of the cases reported here. These patients usually come in vomiting and have a history extending as a rule over several days to a week, during which time they have had no bowel movement, or injudiciously have been given a purgative which has aggravated their symptoms and materially diminished their chances of recovery. When the circumstances permit an ideal appendectomy, that is to say, when the patient is seen early in the attack before any complications have set in, the operation is usually quite simple and is followed almost invariably by an easy recovery. When, however, we have to deal with the delayed severe cases, in many of which abscess or peritonitis of the lower abdomen has already set in, we are faced by as serious a problem as can confront the surgeon. It is our habit to operate on acute cases as soon as seen. All of the six cases in this paper belonged to the delayed class or were serious complicated cases that were recrudescences of old chronic cases.

Care in Operating.—Every effort is made to avoid invasion of the abdominal cavity except at the immediate field of operation. The coecum is identified and the base of the appendix is exposed and clamped with forceps. This point is usually the least involved and least friable. By making traction on this the appendix can frequently be lifted out or in any event its dissection is facilitated. It is not, as a rule, necessary to deliver any of the intestine through the wound except a portion of the coecum and terminal ileum. In this way the appendix is removed with a minimum disturbance of the abdomen. Where there is pus or peritonitis or difficult dissection we drain with rubber tissue. As a rule, the patient shows signs of immediate improvement and goes on to a satisfactory convalescence.

Development of Obstruction.—In a few of these cases, however, the vomiting persists, the discharge from the bowel is incomplete, the abdomen remains distended, and the patient suffers from abdominal pain. These symptoms are treated by what we term low gravity, that is, the lower bowel is flushed and drained by raising and lowering the enema can a few inches. Normal saline or 5 per cent glucose is used. A part of this is absorbed but when the can is lowered the fluid runs back and brings with it a certain amount of dissolved

*Read before the sixty-second annual meeting of the Medical Society of Virginia, at Roanoke, October 6-8, 1931.

fecal matter and results in the expulsion of gas. It is a gentle process but, as a rule, is very effective in relieving distention. Nausea and vomiting are treated by gastric lavage or the insertion of a Juke's tube. The abdomen is treated by ice-bag, sometimes by hot stupes. If these means are not effective, or if they are effective at first and then cease to act, we have to consider other means of treatment. Sometimes the vomiting is persistent from the first and characteristic of gastric stasis, and there is no evidence of bowel action by the passage of feces and gas. In this case there can be no delay and immediate enterostomy is indicated. Unfortunately, however, there is often no definite line of demarcation. Many patients will appear to be entirely relieved and later have a return of symptoms, so that it is at times difficult to fix absolutely the time when enterostomy is indicated. We adopt the general rule to operate if the measures instituted fail to give relief or if the symptoms persist after apparent relief. What has been said applies to cases developing as a result of acute appendicitis, which is the most frequent cause, but obstruction may follow other operations. In that case the symptoms develop following the operation but are of the same character and consist primarily of reverse peristalsis and lack of bowel movement.

Pathology.—The pathology of this type of obstruction is interesting. Adhesions probably play an important part but this is not the sole cause. The most important factor is the distention of the intestines. This is induced by any operation in which the intestines are handled. It is quite customary for movement of the bowels to be deferred to the third day following all abdominal operations. This is done to allow the interference with peristalsis to subside. In grave cases even slight handling augments a condition that already exists and this is further increased by inflammatory inhibition about the ileo-cecal valve in cases of appendicitis. When the intestines become distended they often kink. The distention itself also interferes with proper peristalsis and this inhibition is further increased by the toxic contents of the bowels. Eventually and usually quite promptly after the obstruction has become absolute, the intestines become completely paralyzed, fever sets in and death. Dehydration and depletion of salt reserve as a result of excessive vomiting undoubtedly play an important part.

Treatment.—The essential thing in the treatment of obstruction is the removal of the intestinal contents. This is best done by enterostomy. The best site is the left rectus and the operation is done under local anaesthesia. No search for a point of obstruction should be made because the manipulation increases conditions already present and usually hastens death. Besides it is unnecessary. In all of the recovered cases reported nothing was done to relieve obstruction at the time of enterostomy and it was not necessary to do anything later. In the only death reported in this series the obstruction followed resection of the uterus for tumor. It was believed that it was due to an adhesion at the site of the operation. Ethylene was given and the adhesion was found and released. The distended intestine became eviscerated, necessitating considerable manipulation to reduce. An enterostomy was performed but the patient died in a few hours. A simple enterostomy under local anaesthesia would probably have saved her life.

Multiple Enterostomies.—The object of an enterostomy is primarily to drain the intestine. Unless drainage takes place and is continuous it will accomplish no good. It often happens, owing to the partially paralyzed condition of the intestine, that only a segment will drain and then the flow will stop. Several years ago I had a patient come to the hospital in apparently a moribund condition. She had had an operation two years previously for suppurating appendicitis and was taken with obstruction two days previous to entering the hospital. As her condition was very grave we determined to take two chances by performing two enterostomies. She recovered without operating for the obstruction and her bowels moved spontaneously. In five of the seven recovered cases two enterostomies were done, but in none of them were the two done simultaneously.

Treatment of Enterostomy Tubes.—In every case we irrigate the tubes frequently, usually every hour. We have used small quantities and large quantities and have found that as a rule a pint can be introduced comfortably if given slowly. The tube is then clamped for twenty to thirty minutes and then flow is allowed to take place. Five per cent glucose in normal saline is usually the fluid used. A large

part is apparently absorbed, contributing to the nourishment of the patient, and the outflow of the balance encourages the flow of feces. When two tubes are in use the hourly instillation is alternated.

Adjuvant Treatment.—The stomach must be kept empty by lavage or Juke's tube. We usually give gastric lavage at first and, if this has to be repeated, introduce a Juke's tube. Glucose is given intravenously if indicated, sometimes using a five per cent solution and sometimes the fifty per cent solution. Low gravity is practiced always to encourage evacuation through the bowel.

Hypertonic Salt Solution.—In the last two cases we have used hypertonic salt solution five per cent. In one case we gave three hundred c.c. intravenously and also five pints introduced through the enterostomy tube, giving one pint at intervals. In the other case one pint was given through the enterostomy tubes every hour until four pints were given. In both cases the tone of the intestine was immediately restored and there was a free discharge of normal bright yellow fluid feces through the enterostomy tubes and from the bowel. I have never yet used the hypertonic salt solution without previously having done an enterostomy.

Prophylactic Enterostomy.—I have never yet done an enterostomy at the time of operating on severe appendicitis, but it has occurred to me that it might be a good prophylactic measure. When vomiting is pronounced and the case is a delayed one, I believe it would be indicated.

Conclusions.—1. As the matter now stands, I believe that an entertostomy is the best treatment for post-operative obstruction.

2. If one does not drain satisfactorily, another should be done without undue delay.

3. Irrigation of tubes is indicated both to induce flow of feces and for nourishment.

4. Hypertonic salt solution administered either intravenously or through enterostomy tube has a powerful effect in re-establishing peristalsis in a partially paralyzed intestine and also in inducing a discharge of normal feces.

Report of Cases

1.—Mr. J. W. W. (33-421), age 50 years, admitted to Stuart Circle Hospital October 19, 1928, with a history of having attacks of appendicitis for some years and of having suffered on the day previous with another attack. Immediate operation was done and an appendix that was very much enlarged, reddened, edematous and covered with patches of exudate was removed, the wound being closed without drainage. Patient vomited bile and abdomen became distended and later hard. Vomitus became dark and offensive and he hiccoughed continuously, although he had some movement from the bowels. On the fifth day an enterostomy was done, and about a pint of feces was discharged through the catheter. He continued to vomit and hiccough, gastric lavage failed to relieve, and the enterostomy finally stopped draining. A left rectus enterostomy was done on the seventh day, and one pint of saline was put in alternate enterostomy tubes every hour, and he was given low gravity treatment. During the next night he drained two gallons through the enterostomy tubes, and on the next day his abdomen became soft and he recovered without further operation.

2.—Mr. W. T. R. (33-432), aged 26 years, admitted to Stuart Circle Hospital with a history of previous attacks of appendicitis and this attack came on day of admission. Immediate operation was done through right rectus and an appendix about size of little finger, grayish in color, densely adherent, was removed. In separating adhesions, appendix broke and there was a discharge of thin pus with fecal odor, and also of gelatinous material, evidently a mucocele. A rubber drain was used and wound closed. Following operation, wound drained freely. Patient vomited immediately after operation but this improved. He then developed abdominal pain and distention. An enema obtained good results, but abdomen remained distended, and he began to vomit again, and this became brown and offensive, notwithstanding gastric lavage. Five days after operation enterostomy was done through left rectus incision. This drained freely at first but stopped, and stercoraceous vomiting continued. Six days after operation another enterostomy was done higher up through left rectus incision extended. Next day temperature went to 104 and pulse 120, but enterostomies drained freely, and he made a good recovery, although he had some wound trouble.

3.—Miss E. H. (34-389), aged 33 years, admitted to Stuart Circle Hospital with history of severe abdominal pain and vomiting which came on suddenly two days previously. Enema

had been ineffectual. Abdomen distended. Had been operated by me one month previously, and a large fibroid tumor resected from the uterus. Had suffered pain and nausea following the operation, but had been discharged in good condition, and remained so until taken with this present attack. I was of the opinion that the obstruction was due to a band at the seat of operation. A search was made for this, which was found and released, but the patient became eviscerated, necessitating considerable manipulation. Enterostomy was performed above seat of obstruction, but patient died same night. It was a mistake in this case to seek to relieve the obstruction. A simple enterostomy would, I believe, have been successful.

4.—Mr. C. G. (34-354), age 22 years, admitted to Stuart Circle Hospital September 19, 1929. Fat. Had been operated by me five months previously for a chronic appendicitis, but continued to suffer from obscure attacks of pain in abdomen and it was thought he had a binding adhesion. He was operated through right rectus under ethylene and the terminal ileum was found held down firmly in the iliac fossa by a Lane's band. This was divided and sutured transversely with apparent complete relief.

Following operation, patient continued to vomit and became distended, although low gravity apparently worked very well. Six days after operation wound opened by cutting through of stitches. Patient was very fat. Resuture was done under local anaesthesia, but patient continued to vomit and gastric lavage evacuated a large amount of stercoraceous matter from stomach. Enterostomy was done within twenty-four hours of repair of wound. Small intestines very much distended. No relief from vomiting, tube did not drain, colonic irrigations gave no result, and he was draining black fluid from stomach through a Juke's tube. At this point sinusoidal current was administered which stimulated intestines to action and enterostomy tube drained freely and bowels moved. He eventually made a slow but perfect recovery.

5.—Mr. G. B. (35-68), age 17 years, admitted to Stuart Circle Hospital February 20, 1930. Taken with a vomiting spell nine days before and developed an abscess of appendix which worked up from pelvis. Immediate operation through McBurney incision under ethylene anaesthesia. Appendix not removed, large abscess drained.

March 1st: Intestinal obstruction with usual symptoms. Median incision. Removed pelvic appendix and a concretion which had escaped. Obstruction caused by dense adhesion which was released. Enterostomy above point of obstruction. Recovered rapidly.

March 19th: Dissected out granulation tissue and sutured wound.

March 27th: Intestinal obstruction, enterostomy. Good drainage and soon began to pass gas and have normal stool.

April 16th: Discharged, recovered.

6.—E. D. (35-336), aged 5 years, admitted to Stuart Circle Hospital October 17, 1930. Taken day previous. Immediate operation for acute appendicitis with diffuse peritonitis. Appendix was removed and wound drained.

Two weeks after operation, when she was about to leave for home, was taken suddenly with abdominal pain and vomiting. Immediate enterostomy which drained freely. Was discharged wound healed and recovered fifteen days later.

7.—Mr. R. V. J. (36-159), aged 55 years, admitted to Stuart Circle Hospital May 24, 1931, with a history of severe abdominal pain and copious vomiting. Abdomen was distended but not hard and the greatest tenderness was in the right iliac region. He had taken salts and numerous enemata but had had no bowel movement. Diagnosis: Intestinal obstruction, probably due to adhesions.

Operation immediate, under spinal anaesthesia. Small intestine congested and distended with the terminal ileum collapsed. A small filament of adhesions was located which extended over the intestine and caused the obstruction. The coecum and appendix were densely adherent deep in the pelvis. The band of adhesions was divided with scissors and the adhesions of the coecum were released by finger dissection until the base of the appendix was exposed. In the process of removal the appendix broke and the tip was seized and removed also. The entire ileum then distended with gas, showing complete release of obstruction. Wound closed without drainage.

Comment: The patient had evidently had a severe appendicitis probably many years before. He had suffered from indigestion but presented no history of an acute attack of appendicitis. His present attack was evidently

inaugurated with an attack of appendicitis. Operative Diagnosis: Acute appendicitis on chronic. Intestinal obstruction. Following operation he was given five per cent glucose in normal saline by low gravity. The day following he began to vomit and this became continuous. Gastric lavage gave no relief. Glucose was given intravenously.

On the third day a left rectus enterostomy was done. There was a discharge of gas but no fecal matter. The enterostomy tube was irrigated hourly with four ounces of saline but there was only a slight discharge of fecal matter and the patient continued to vomit and the distention increased. A Juke's tube was passed into the stomach which drained with dark fluid of foul odor. Ox-gall enema was effectual but there was no improvement in the patient's condition and he became slightly delirious. As there was no result from the first enterostomy, another was done on the following day through a left rectus incision placed above the previous one. Instillation of salt solution was continued in both tubes and there was a slight drainage from both but it was not free and the patient did not appear to be relieved. Two days after the second enterostomy he was given five per cent hypertonic salt solution, one pint every hour, introduced through alternate enterostomy tubes. In this way four pints were given in three hours. Following the last instillation there was a large liquid stool of a brownish yellow color and following this a huge involuntary stool. Both enterostomy tubes began to drain freely and the patient's condition became more rational and improved. He was given some coffee and ice cream the same day that his bowels moved freely and his diet was gradually increased. Both enterostomy tubes were removed eight days after the first one was inserted. Discharged at the end of twenty days.

8.—Mrs. E. L. (36-214), aged 57 years, admitted to Stuart Circle Hospital July 12, 1931. Had been taken six days previously with epigastric pain and vomiting but this improved and patient was able to take some food, but four days after her initial attack she was taken worse and on the day following abdomen became hard and she began to vomit. Examination: Abdomen hard throughout, greatest tenderness in the right iliac. Diagnosis: Acute appendicitis, probably ruptured appendiceal abscess.

Operation immediate under spinal anaesthesia. Free pus in moderate amount was found immediately under the incision and welling up in the pelvis. There was a strong fecal odor. Pus was removed by suction. The appendix extended up behind the coecum and contained a concretion at the base. Beyond this was a gangrenous area of one inch and beyond this the appendix was distended with pus. The whole appendix was densely adherent throughout, and, in removing, it broke, discharging foul pus. However, the area was well protected with gauze sheets. Drainage was introduced and the wound closed. Following the operation the wound drained freely. Three days after a fecal fistula was established in the wound. A week after the operation she began to spit up and vomit brown fluid, but the next day her bowels moved freely. She continued, however, to suffer from nausea and occasional vomiting but would also have stools from enemata. Finally, on July 24th, twelve days after the operation, an enterostomy was done through the left rectus. This was irrigated freely with five per cent glucose and drained a very dark watery fluid rather profusely. However, she continued to vomit, although enemata gave good results. Three days after the enterostomy 300 c.c. of hypertonic salt solution was given intravenously and one pint of the same solution instilled into the enterostomy tube every hour until five pints were given. The patient then began to drain freely from the enterostomy tube and from the fecal fistula at the site of the original operation. The drainage consisted of liquid feces of a yellowish brown color and the abdomen became soft. Her bowels were kept open following this, when necessary, by enemata of one pint of the same hypertonic solution. The patient had now become delirious and refused nourishment, although her nausea was relieved and her bowels were moving completely and normally.

On August 4th, twenty-three days after her original operation, it was found to be impossible to force the patient to take food. A duodenal tube was introduced and through this she was given milk and hydrochloric acid and water. This was continued for twenty-one days, during which time the patient developed a definite pneumonia, which yielded to pneumococcus antigens. Notwithstanding this, she improved in flesh and gradually returned to

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normal and was able to take general diet. Following this, she developed phlebitis in both legs alternately, which yielded to treatment by light. On September 19th her wound was repaired, and on October 3rd she was discharged from the hospital recovered.

Stuart Circle Hospital.

DISCUSSION

DR. I. A. BIGGER, *Richmond:* I enjoyed Dr. Robins' discussion of this interesting and important subject. The treatment of post-operative intestinal obstruction is important to every surgeon, because, no matter how careful we are, we will have such cases occasionally.

I believe we should consider the subject first from the standjoint of prophylaxis. It is important to keep infected abdominal cases on little or nothing by mouth until the abdomen begins to flatten out. At the Medical College of Virginia hospitals we are in the habit of ordering such cases nothing by mouth for the first twenty-four to forty-eight hours. We keep up their fluids, which, of course, is very important, by the administration of salt solution or glucose either intravenously or by hypodermoclysis. At the end of twenty-four hours, if the abdomen is not distended, we give small amounts of fluid by mouth. If it is distended, we limit the fluids by mouth until the distention begins to disappear. If it remains distended and the patient continues to vomit, we believe that surgical intervention is indicated.

The type of operation advised depends on the type of obstruction. When dealing with a mechanical obstruction, coming on during the first ten days, we advise an enterostomy. If the obstruction develops later and the patient's general condition is good, laparotomy with relief of the obstruction is the treatment of choice. The treatment in each case must be considered an individual problem.

Enterostomy should be done by a certain technique. We usually make an incision slightly above the level of the umbilicus, preferably on the left side. The operation is carried out under local anaesthesia. I do not believe it is wise to search for any particular segment of bowel, as, for instance, the upper portion of the jejunum. Even if it can be easily found, I am not sure it is wise to drain the upper jejunum for any considerable time, and the search for the jejunum adds to the operative trauma. If you go in, pick up the first distended loop of bowel, and insert a tube, using local anaesthesia, there is almost no shock, and I think the results are better We use the Witzel method, as there is less chance of subsequent leakage.

WARD WALK—DISCUSSION OF SOME CLINICAL PROBLEMS.*

MARSHALL J. PAYNE, M. D., Staunton, Va.

Hospital Record.—Y. E. R., white, female, widowed, age 49-50 years. First visit for present illness January 23, 1931.

Chief Complaint.—About January 10, 1931, noticed for the first time "a small amount of bloody discharge without leukorrhea from the vagina." Fatigued all the time. Patient requested "douche."

Family History.—Negative for cancer; positive for tuberculosis.

Past History.—Has had the usual diseases of childhood; no other serious illness. Menopause about three years ago without discomfort. General health has been good.

Marital History.—Has had one child, now 25 years old, one instrumental delivery, no tear of cervix, no repair operation, two miscarriages, and two operations for tubal pregnancies. At time of last operation, for tubal pregnancy, the appendix was removed.

Physical Examination.—Weight 130 lbs.—no lost weight. Healthy, normal looking woman, very intelligent, bright happy disposition. Heart and lungs normal. Blood examination R. B. C. 4,200,000. Haemoglobin 75 per cent. Wassermann negative. Pelvic examination made, same day, showed striking, unmistakable, advanced, hopeless malignancy of the cervix uteri.

February 2nd.—"Whole cervix badly involved and retracted." Biopsy, "squamous cell epithelioma type 2"—Broders.

Radium Treatment.—In all, three applications of radium were made. Following the last treatment a sharp hemorrhage took place, and a marked offensive characteristic odor developed. The process extended rapidly and is now widespread.

Progress Notes.—September 30th.—The condition appears hopeless. The pain is very severe, and the use of morphia for severe darting pains is demanded. The general condition is poor. Emaciation and rapid loss of strength is very noticeable.

The clinical problem presented by this case is: How could an earlier diagnosis have been made? What evidence did the intelligent patient see, to cause her to seek medical advice? The first and only symptom noted was a bloody vaginal discharge. The occurrence of a bloody discharge is a late sign in cancer of the uterus. How can the physician or surgeon make an early diagnosis, when the patient does not request an examination?

Paraphrasing one of the popular radio advertisement sugegstions, we might have broadcast over the radio each night: "Be sure to have your uterus examined for cancer at least twice a year."

Granted, that by some means, all of our fe-

*Read at the sixty-second annual meeting of the Medical Society of Virginia in Roanoke, October 6-8, 1931.

male patients of the cancer age should come for an examination every six months in order that we may determine the existence or non-existence of uterine or cervical cancer, what symptom or sign, or group of symptoms or signs, will enable us to conclusively determine the presence or absence of malignant disease of the cervix or uterus in the early stage? And infinitely more important to the patient is not our ability to discover cancer in its early stage, but to discover the precancerous manifestations. What symptom, sign or condition, therefore, may we rely upon to enable us to diagnose the precancerous condition? Indeed, the diagnosis frequently is made so late that it is valueless to the patient. A diagnosis of malignant disease made after the appearance of the classical or conventional signs and symptoms is, usually, of no more practical value to the patient than a diagnosis made at the autopsy. One may well ask then: "What will enable us to make a diagnosis in the precancerous stage?" A better understanding of the nature and the cause of malignancy will enable us to correctly interpret the evidences of precancerous conditions. Very briefly I shall refer to some conventional descriptions of cervical and uterine cancer, and that you may know exactly what is taught in recent textbooks. I quote the following:

In Nelson's Loose Leaf Living Surgery, Vol. 7, page 179—"It is so unusual to encounter a woman with cervical cancer who has not been pregnant or has not been subjected to an operation involving the cervix, that in such cases the diagnosis is open to serious questioning until substantiated by biopsy." . . . "Truly 95 per cent of all women with cervical cancer have been pregnant." . . . "Careful history will show not more than 2 per cent of the cases developing cancer in previously untraumatized cervix." That refers to traumatism either by pregnancy or by instrumentation.

In the same reference, Vol. 7, page 191—"Leukorrhea is the first symptom of a new growth in the cervix, watery in character, odorless and slight in amount during the early stages." . . . "The diagnosis of cancer of the cervix is based on the history of the leukorrhea, palpation and the biopsy." . . . "The histological study is the court of last resort." . . . Although positive findings at the biopsy (the histological examination) is conclusive evidence, that the patient has cancer is necessarily a late diagnosis. The vital question is how much cancer has the patient got. Recurrence at once may occur.

I have read many treatises and listened to many dissertations on cancer, yet I have never known anyone to give any conclusive characteristic symptom, sign, or method for the determination of the certain diagnosis of malignancy in its early stage. Nor have I been able to learn from anyone some unfailing means which would unerringly enable *me* to clinically make the diagnosis of malignancy in the early stage. Let me urge a word of caution against the use of biopsy, without facilities for immediate examination of tissues and without facilities and plan for immediate, proper treatment.

Let us briefly discuss the cause of cancer. I quote from Practical Medicine Series 1930, General Surgery, Graham, at pages 451-2: "Examination showed in most slides the typical gastric ulcer. In one slide there were two acini that showed carcinoma." . . . "The logical conclusion is this microscopic area had recently arisen in the region of the ulcer as a result of the irritation." (Dr. J. S. Horsley.)

The truth is very near. Careful case histories show "98 per cent of all cases of cervical malignancy connected with the existence of a traumatized cervix, and in the remaining 2 per cent that the diagnosis is doubtful until shown by the microscopic examination." We may conclude then that trauma is a striking antecedent of cervical cancer, and "irritation" is likewise an antecedent in malignant disease of the stomach.

Did you ever stop to think that the effect of trauma, whether bacterical, chemical, thermic, physical, or mechanical is to excite tissue reaction-inflammation? And this conclusion logically and inevitably is forced upon us—that cancer may follow a succession of inflammations of the part affected. A chemical or ferment theory of the cause of cancer harmonizes with clinical and experimental findings.

Likewise, specific infections occur as antecedents of cancer. For example, in Acta Dermatologica, January, 1928, A. Tukai presents "a review of the rare type of cancer—primary carcinoma of the male urethra." Eighty cases are discussed. I quote exactly: "It appears to develop in most cases following chronic in-

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flammation, the history showing a previous gonorrhoea in 60 per cent, and trauma in 12.7 per cent of cases reported. Few of the cases reported were early diagnosed and treated, hence a mortality of 71 per cent."

It is significant that chronic gonorrhoea and traumatism are found in case histories of 72.7 per cent of primary cancer of the urethra. I believe, therefore, that we must add an additional termination to inflammation. It has long been taught that inflammation may terminate in:

1. Return of the tissues to health; this return may be by delitescence (abrupt return);
2. By resolution;
3. By new growth (formation of fibroblasts, granulation tissue);
4. By death of the part, abscess, gangrene, etc., and
5. By death (somatic death).

And I now add to the foreging classic teaching:

6. *By malignancy* (M. J. Payne).

The conclusion that succession of inflammation may actually terminate in cancer serves to clear up and harmonize many conflicting theories about cancer. This conclusion, therefore, will enable one to a better understanding of the subject of cancer, and, in consequence, the means of early diagnosis and proper preventive treatment will be more fully appreciated and employed by the medical profession and the laity. The shocking revelation of the results obtained by the present day management of cancer cases conclusively demonstrates that the hope for the cancer victim lies in cancer prevention, and not in treatment of cancer. In a further paper, shortly to be offered, I shall more fully give my reasons for the above conclusion.

The challenge to the medical profession, by the very nature of the subject, is to teach the medical men and the laity that a persisting chronic inflammatory condition, irrespective of its location, is a potential cancer, and that, should the chronic inflammation fail to yield to proper remedial measures, it should be dealt with according to the most approved plan of treatment for cancer of the part affected. The diagnosis then of an unyielding chronic inflammation is a diagnosis of the true precancerous condition.

Summary and Conclusions

The term cancer used herein in the broad sense includes all malignant processes.

Cancer is a termination of inflammation. A succession of processes of inflammation occur, but not every chronic inflammation terminates in cancer. Likewise, not every inflammation terminates in abscess, gangrene, etc.

It is difficult, perhaps impossible, to make a constructive or differential diagnosis of cancer in the early stage.

A diagnosis of a chronic unyielding inflammation is a diagnosis of potential cancerous condition.

Cancer has a selective affinity for certain tissues and organs of the body, for example, cervix, uterus, stomach, breast, rectum, etc.

No one specific bacterial agent seems responsible for cancer development.

It is a significant fact that careful histories of 98 per cent of cases of cervical cancer reveal preceding trauma of pregnancy or instrumentation. The traumatized cervix is exposed to the acid secretions of the vagina and to the presence of the streptococcus and other bacteria. Likewise, 72.7 per cent of eighty cases reviewed of cancer of the urethra gave a previous history of gonorrhoea and trauma of instrumentation, and it is noted in both cervical and urethral cancer that successions of inflammation occurred.

The five or ten year period of freedom from return of cancer, as an index of a cure, is misleading. Recently I saw a recurrence following a radical breast operation after twenty years of freedom. The ultimate mortality of cervical cancer is about 98 per cent. J. B. Murphy made the statement that not more than 2 per cent of cases of cervical cancer were cured.

The mortality of pan-hysterectomy in careful hands should not exceed 5 per cent. It would seem, therefore, that the logical treatment of the precancerous cervical condition is a pan-hysterectomy. The precancerous condition is chronic unyielding inflammation, always a potential cancer manifestation. We need to offer these cases true help, not a cold, lifeless stone.

Radium may be used and should be reserved for cases past the precancerous condition, or in actual cervical cancer. I confess that I have not seen a cure by use of radium.

Positive cancer biopsy findings, although conclusive evidence, is a late diagnosis, and

any claim for early recognition of cervical cancer is thereby precluded.

Biopsy does not tell how much cancer is in the patient's body. Biopsy can only prove that cancer is present in the tissue removed for examination.

Education of the profession and the public that cancer is a termination of inflammation and that cancer may be prevented by proper management will save many valuable lives.

A very recent confesssion by an intelligent widow of a physician indicates that the laity is more aware of the need for safe treatment in chronic inflammatory uterine conditions than the medical profession usually administers.

A prominent educator urged me to say that medical schools should teach graduates methods of thoroughness in examining patients, in order that a diagnosis of the cause of diseases may be made. The educator stated that many medical men simply apply some remedy for symptoms, without any regard for the diagnosis or the cause.

Hope for the lessening of the incidence of cancer lies in diagnosis of the precancerous manifestations and the application of appropriate treatment therefor. It is infinitely better to prevent than to have to treat cancer.

The profession needs to practice truth towards itself and frankness toward the patient.

REPAIR OF BILATERAL HARELIP.*

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Harelip may be defined as a congenital cleft of the upper lip, frequently extending into the nostril on one or both sides. It is simple when only the lip is involved and complicated when associated with a cleft of the alveolar process and the palate. It may be unilateral when the cleft is on one side, and bilateral when it is on both sides. Bilateral cleft is about one-fourth as frequent as unilateral, and left unilateral is a little more than twice as often found as the right. I will not go into a discussion of the unilateral harelip and cleft palate at this time, but will limit my remarks to bilateral harelip.

By observing the face of a six weeks old embryo, it will be seen that the mandibular process has already fused in the midline to form the lower jaw. The maxillary process on each side is separated by a groove from the median, which grows down from the fronto-nasal process. A fusion of these processes will form the upper lip, superior maxillae and the palate. Should there be a failure of fusion of the processes, a typical harelip and cleft palate will occur.

Fig. 1.—A.—Case of bilateral incomplete harelip—nine months of age.
B.—Postoperative result sixteen months after repair. Note the smooth lip-border, symmetrical nostrils and full, thick lip.

The cause of harelip and cleft palate is not known, but several theories have been offered. The tongue in the young embryo rests high against the fronto-nasal process, between the maxillary processes and, as growth occurs, the tongue descends, allowing the latter processes to come together. Should the tongue be prevented from descending, it will act as a mechanical factor in keeping the maxillary processes separated, and a facial cleft will be the result. There is some experimental proof in favor of improper foods on the part of the mother, retarding the development of the embryo as the cause of harelip. This is probably not as important a factor as the mechanical obstruction of the tongue. Heredity undoubtedly plays a part in some cases, but is too rare to be of great importance. It is estimated that heredity has a bearing on the etiology in from 10 to 20 per cent of the cases.

Bilateral harelip may be classified into several clinical types, as simple and complicated, or what is better, as complete and incomplete. When it is complete, the cleft extends all the way into the nostril, with usually a cleft of the alveolus and palate in addition. When it is incomplete, the cleft does not extend all the way into the nostril. A bilateral harelip case may be incomplete on both sides, complete on one side and incomplete on the other, or complete on both sides.

The deformity of a bilateral harelip is very

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Fig. 2.—A.—Patient thirteen years of age; complete bilateral harelip.
B.—Shows the degree of protrusion of the premaxillary body, and the presence of a tooth on the process. It was necessary to resect the vomer and septum in this case to retrodisplace the premaxilla.
C. and D.—Postoperative fourteen days, showing symmetrical, rounded nostrils, a normal width of the lip and a natural fullness and protrusion of the lip.

striking. The cleft extends into both nostrils through the upper lip, alveolar process, and hard and soft palate. The premaxillary process projects much further forward than the lateral maxillary processes. It is not unusual to have the median process protruding one-half to one inch further forward than the lateral. This deformity not only gives the patient a very unsightly appearance, but makes the operation more difficult in older children. After the teeth have erupted the two central incisors present themselves on the alveolus of the premaxillary process. Sometimes four teeth are seen, but usually the lateral incisors are lost in the cleft. Another deformity noticed is that the philtrum is lost and the columella is too short. The alae nasi on both sides are flattened and flared out. In repairing a harelip it is most important to correct the nasal deformity in order to get a pleasing result. The best time for operation on a harelip is during the first few days or weeks after birth.

Fig. 3.—A.—Case of bilateral harelip, complete on right, incomplete on left. Note the wide cleft on the right and the flattened and depressed ala nasi. The tip of the nose and nasal septum are deviated to the left.
B.—Eighteen days after operation, showing the nasal deformity to be corrected, the symmetrical nostrils and the median position of the nose.
C.—Shows the natural fullness of the lip in profile.

At this time the bones of the processes are soft and can be molded into position by thumb pressure, while the pull of the repaired lip will bring them closer together and obtain a more normal development. The effect of this will be to help close the palate cleft in front, and thus make it easier for the palate operation at a later date. The general condition of the patient is usually better immediately after birth

Fig. 4.—A. and B.—Girl eight years of age. Complete bilateral harelip with considerable protrusion of the premaxillary process, and two incisors growing from the alveolus. In the operative correction, it was necessary to resect the vomer and septum to place this protruding process back to proper position.
C. and D.—Results fourteen days after operation. The profile view shows that there is no backward displacement of the upper lip, which may result from allowing the premaxillary process to move too far backward when the vomer and septum are sectioned.

than a few months later without operation. These patients are susceptible to many respiratory infections because of breathing cold and unfiltered air through the wide open nose and mouth. They are unable to nurse and frequently suffer from loss of weight and impaired nutrition which may become very serious if not corrected. After the operation they should be able to nurse, and their general health should be better because of a normal nasal respiration.

Before the operation there should be a thorough physical examination, to exclude any acute infection, enlarged thymus or other pathological condition, which would make the operation more dangerous. The coagulation or bleeding time should be done, and corrected if prolonged, to lessen the chances of hemorrhage. The feeding should be regulated and supervised by a pediatrician to support the nutrition and prevent the loss of weight. Sometimes these babies are brought into the hospital in such a serious state of malnutrition and underweight that the operation has to be postponed for some time, in order to improve the general condition.

The anesthetic for the operation depends on the age of the patient and the choice of the surgeon. As a general rule ether is the safest general anesthetic for an infant or a young child. For older children, or adults, avertin and local, or local alone may be used satisfactorily. Blocking the infraorbital nerves on both sides will control the sensation of the lateral processes, and infiltration of the soft tissues of the septum back of the premaxilla will take care of the pain of the median process for the lip operation.

The protruding premaxillary process can frequently be pushed back by thumb pressure in the infant, and the molding of the repaired lip may be depended on to bring it still further back to its natural position. If the process is displaced extremely forward, or the septum and processes have become ossified, as in older children, it will be necessary to make a submucous section or resection of the vomer and nasal septum just back of the premaxillary process. This will allow the premaxillary process to be brought back to the proper alignment. The edges of the alveolar margin should be freshened and fixed into position until union occurs. Occasionally the repaired lip will hold it in its proper position, but it is usually better to fix it to the lateral processes by silver wires. In older children fixation may be obtained by wiring the teeth of the median to those of the lateral processes.

Fig. 5.—A.—Complete bilateral harelip, six months of age. B.—Fourteen days after operation.

Sometimes it is better to do the operation on the alveolar process at one stage and a week or ten days later repair the lip at a second stage. In most cases, however, especially in the younger patients where the bones are soft and the processes can be molded in position without much difficulty, the entire procedure may be done in one stage.

It is necessary to resect the attachment of the ala of the nose and adjacent part of the lip from the superior maxillae to a wide extent, to immobilize the soft tissues in reconstruction of the lip and reshaping of the nose. The premaxillary process should never be removed, but should be used in forming part of the lip. The skin portion of this process should be trimmed to a quadrilateral or wedge-shaped structure. The lateral edge of this part should represent the length of the incision in the lip of the lateral process extending from the ala

Fig. 6.—A.—Incomplete bilateral harelip—four months of age. B.—Four years postoperative. The picture has probably been touched up by the photographer. It shows symmetrical nostrils and smooth lip-border.

along the muco-cutaneous line. This same outline is made on both sides so that when the raw surfaces are brought into apposition with that of the median process, the vermillion border will fall at the lower edge of the latter. The flaps of mucous membrane from the lateral processes are then adjusted to each other in a smooth outline to form the lip border beneath the premaxillary process. This plan does not force any skin from the lateral part below the median process which may make the lip too long. The operation may be modified to suit the individual case, but the principles should be the same; to conserve all the tissues possible, not to make the lip too long, and not to have a receding upper lip. It is better to suture the muscle and mucous membrane under the lip in separate layers in order to take the tension off of the skin sutures. The skin sutures can then be placed superficially and removed early to prevent scarring as much as possible. Horse-hair or fine dermal sutures are preferred for the skin and mucous membrane. Care should be given in forming the nostrils, to see that they are of normal and equal size on the two sides. As a rule, no dressing is applied to the lip, and the wound is left open after the suture line is dusted with sterile boric acid powder. It is advisable to make judicious use of specially cut adhesive strips to relieve the tension on the suture line. It is best not to apply these trips directly across the suture line.

Fig. 7.—A.—Complete bilateral harelip.
B.—Result fifteen months after operation.

In the post-operative care of these patients it is important to tie the hands down, or put cuffs on the arms at the elbows to keep the hands away from the lip. The lip is cleansed whenever necessary with equal parts of sterile boric acid solution and alcohol, followed by the dusting of sterile boric acid powder on the lip. The sutures are removed in from five to seven days. The feeding is given with an infant feeder or medicine dropper. The patient is not allowed to nurse the nipple for about two weeks after the operation.

The patient should be returned at a later date for repair of the cleft palate and a check-up on the results of the harelip operation. In some of these cases the cleft is too wide to get the best results from the primary repair, and some finer adjustment of the lip or nose may be made at the time of the cleft palate operation.

NOTE: Cases in Figures 6 and 7 were operated upon by Dr. C. C. Coleman.

Professional Building.

THE INTRA-MUSCULAR INJECTION OF LIVER EXTRACT IN CASES OF PERNICIOUS ANAEMIA.*

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Pernicious anaemia up until a comparatively recent date was considered invariably a fatal disease but has been controlled almost entirely, as you know, by the use of liver. The ingestion of liver in its numerous methods of preparation has been the cause of saving many lives of those who would cooperate with this therapeutic measure.

Unfortunately the ingestion of liver has had two drawbacks which were very pronounced. 1. The eating of liver over a long period of time became so abhorrent to many individuals that the very mention of the name would cause nausea. These individuals naturally became rebellious and consequently constant remissions occurred. 2. The manufactured preparations, in which there was liver concentrate, were prohibitive in their price as only the well-to-do could afford to spend about $8.00 a week for the manufactured preparations. Even the eating of liver was an expensive proposition, for to get the best results an individual had to consume at least one-half pound a day and, with calves' liver at 90 cents a pound, many persons had to die of anaemia.

Two years ago I instituted what I think was about as cheap a method as possible, and that was having the individual make his own aqueous extract. This was done by utilizing either hog or beef liver, at the market price

*Read before the Medical Society of the District of Columbia.

which was about 25 cents a pound, over 90 cents a pound for the calves' liver. I had the patient chop the liver in small pieces, put it into a container, add a pint of water and allow to simmer for at least an hour, keeping the water to a pint, as is done in making the old time beef tea. These patients could take this aqueous extract in three or four ounces at a time, several times a day, disguising the taste with lemon or orange juice and, drinking it in small quantities, frequently they could gulp it down in such a manner that they did not seem to object to it. Of course I do not know that this aqueous extract would be entirely beneficial as a primary treatment in a severe case of pernicious anaemia but I have used it with a good deal of success with those who have had a blood transfusion to tide them over.

It was only natural to suppose that as time went on the investigators, who have been working so faithfully and untiringly on this subject, would arrive at some method of administering liver which would not only be less expensive but could be given either intramuscularly or intravenously.

It remained for Cohn and West to devote their time to finding an active principle in breaking the liver structure in what they termed fractions. Their fraction G seemed to be of particular importance and could be administered intravenously without causing reaction to any great degree, other than lowering the blood pressure. This did not seem to be a very alarming symptom when used primarily on animals, and then on human beings.

The first published paper on the intravenous use of concentrated extracts of liver was published by Castle and Taylor in the *Journal of the American Medical Association*, April 11, 1931. It is believed though that Murphy of the Peter Bent Brigham Hospital had done work along this line prior to the publication of the aforesaid paper. I would refer you to this most excellent article as it goes into detail in a most scientific manner. Dr. Murphy, of the Peter Bent Brigham Hospital, I believe has the credit of using the first intra-muscular injection of liver in this country in cases of pernicious anaemia. He instituted this treatment in May, 1931, about the same time that Dr. Joseph E. Connery, of the Third Medical Division of Bellevue Hospital did.

Having under my observation in my service at Providence Hospital several cases of pernicious anaemia at the same time, I decided to use the intra-muscular injection of the solution of liver extract. I communicated with one of the drug manufacturing concerns who kindly sent me, gratis, sufficient amount of their product to treat the patients that I had under observation. I ordered this at my own expense but when they found out it was for hospital patients they insisted on supplying me with the preparation. The results in my three cases were so astounding that I am reporting them in hopes that others will institute the treatment at once and I would appreciate very much if those who are kind enough to follow out the suggestion will let me know their results, as this is only a preliminary report.

The solution is an aqueous concentrate coming in ampules containing 5 c.c. of material from 100 grams of liver. An ampule is given each day in the gluteal regions for four or five days, after which, according to the response of the individual, the time of administration may be lengthened to one a week or even longer.

We examined the blood the day following these administrations and found wonderful improvement each time. These ampules cost, at the present time, $3.50 for three ampules. Hospitals, I presume, could get it at a more reasonable figure and there is no question that in time, when it becomes more extensively used, the cost will drop in proportion. Even now if the patient takes the first four at less than $1.00 apiece and after that a week or more apart, it is less expensive than the present method of extract and ingestion of liver. I believe that the dose of 5 c.c. should be divided as the full contents of one ampule caused considerable pain in one individual.

I am only abstracting in the following cases and not giving complete histories.

Case No. 1.—Mr. S—, adult, male. Brought to the hospital December 8, 1931. He was in such bad condition that he was brought in on a stretcher and looked desperately ill. Had an anxious expression and looked like he was exsanguinated. Complained of intense weakness, inability to walk, tingling sensation in fingers and toes. Marked dyspnea; palpitation of the heart; gradual loss of weight; diarrhea; itching of the skin; soreness of the tongue. Pearly

sclera, pale conjunctiva. Tentative diagnosis: Grave anemia.

Physical examination at this time does not show any cause for his general anemic appearance. Haemogram ordered and reported December 9, 1931, shows a red cell count of 830,000 per cu. mm., his hemoglobin was 18 per cent, leucocytes 4,800. The blood picture shows anisocytosis, many microcytes and macrocytes together with poikilocytes and some polychromatophilia and an occasional nucleated red blood cell.

This patient was of the rebellious type and had taken liver by mouth over a period of such a long time that he said he came there to die and said he had rather die than take any more liver. The sight of it made him so sick that he could not stand it. We gave him a transfusion because at this time we had not received the liver extract that we had ordered. His red cell count increased to 1,640,000 and the hemoglobin to 30 per cent. The reticulocytes at this time were 1.2 per cent. His blood picture remained at this level until December 19th, at which time the intramuscular use of liver was initiated. The next day the hemoglobin was 32 per cent, the red cell count 1,830,000, the reticulocytes were 5 per cent. December 23rd, hemoglobin 33 per cent, red cell count 1,920,000, volume index 1.3. The fragility test showed beginning hemolysis 40 per cent, complete hemolysis 24 to 28 per cent.

There was gradual daily increase in this patient up until January 12th, at which time he was discharged from the hospital. His blood picture showed 65 per cent hemoglobin with 3,800,000 red cells. He states that he feels better than he has in many years. He walks with agility and his cerebration is unusually active. He now comes to the dispensary once a week for his hypodermic injection.

Case No. 2.—Mrs. W—, white, female, age 54, admitted to the hospital December 12, 1931. Complains of intense weakness, tingling and numbness of the extremities. Marked dyspnea; wobbling gait. This patient is well nourished, has anxious expression, waxy looking skin, pearly sclera and very very pale conjunctiva. The tongue and throat quite sore and very glazed looking in appearance. She has no appetite and complains of vomiting and diarrhea at times. Tentative diagnosis: Severe anemia.

Physical examination does not show any cause for her anemia. This patient had been in the hospital on three different occasions. While she had cooperated to the best of her ability she had reached the stage where she could no longer take liver by mouth. Haemogram shows a hemoglobin of 15 per cent, red cell count 890,000. This patient was in such bad shape that a transfusion was given to tide her over. As a result of this transfusion the hemoglobin was 30 per cent and red cell count 1,630,000. She remained at this level until December 22nd at which time liver extract intra-muscularly was instituted. On the 23rd her hemoglobin had increased to 34 per cent, her red cell count remained the same but her reticulocytes rose from 1 to 3 per cent. The liver extract was given to her daily for five doses at the end of which time her hemoglobin was 65 per cent and the red cells were 3,270,000. Her appetite increased rapidly. She walked around the wards with great comfort and claims to have felt better than she had for years. She was discharged from the hospital January 5, 1932, but she was told to come back to the dispensary once a week for treatment. The last count, February 16th, the hemoglobin was 80 per cent and her red cell count was 4,000,000.

Case No. 3.—Mrs. B—, age 50, admitted to the hospital October 15, 1931. This is a well nourished woman, with anxious expression, marked dyspnea. Skin has a glazed and lemon tinted appearance. The sclera is pearly gray in appearance. The tongue is smooth and very sore. She complains of intense weakness, pains in the limbs. She has recurrent attacks of diarrhea. The tentative diagnosis in this case: Grave anemia.

Physical examination does not disclose any cause for this anemic condition. Haemogram—October 16th—shows hemoglobin 24 per cent, red blood cells 1,000,000 and the rest of the picture characteristic of pernicious anemia.

This patient was used as a control case, having administered to her the aqueous extract of liver by mouth as above described by me. She was getting an extract equivalent to one-half pound of beef liver a day. On October 24th her hemoglobin was 30 per cent, red cells 1,320,000, reticulocyte count was 5 per cent. This treatment was continued until October 30th at which time her hemoglobin was 58 per

cent. red cells 2,610,000. On November 3rd, the patient was placed on ventriculin, 20 c.c., three times a day. As the patient commenced to show signs of remission we discontinued the ventriculin and instituted the liver extract solution by mouth. On November 28, 1931, her hemoglobin was 65 per cent, red cells 3,090,000. She continued to improve until time for discharge, at which time her hemoglobin was 66 per cent, red cells 3,350,000. This woman lived in the country and we have not been able to follow up this case, although we told her how to make her aqueous extract and asked her to get in touch with us in the near future. She was discharged from the hospital, December 25, 1931.

Case No. 4.—This case is interesting because she has cooperated in every way for the past five years, having come under my observation the first time March 23, 1927. This woman, like all other such cases, would have remissions due to the fact that she would reach the stage where she could not possibly eat liver in any form and the manufactured extract was too expensive. She has had numerous transfusions and would be benefited for a while. In March, 1929, I suggested her using the aqueous solution as described in my opening remarks. This aqueous extract she seemed to be able to take without causing her much revulsion of feeling. She could take the equivalent of nearly one-half pound a day, disguised in different ways, and she did not seem to mind, as she claimed, gulping it down. During the last mouth, she went on a strike and would not take the liver any longer.

When she came under my observation in 1927 her hemoglobin was 43 per cent, red cell count 1,990,000, and the complete picture of pernicious anemia. With her honest cooperation she reached levels varying as high as 80 per cent hemoglobin and 3,270,000 red cells on the aqueous solution of liver extract. February 29th, of this year, she commenced to complain of palpitation, dizziness and intense weakness. Her hemoglobin was 68 per cent, red cell count 2,390,000. She has, so far, received four injections of the liver extract and on March 3rd her hemoglobin was 75 per cent and her red cell count was 3,680,000. Her dizziness and weakness have practically left her and she feels very much improved.

Case No. 5.—Miss S—, college student, age 19. Complains of loss of appetite, tires easily, gastric disturbances, dizzy spells. Sclera pearly, conjunctiva very pale, tongue raw looking. Diagnosis: Marked anemia.

Blood examination, February 10, 1932. Red cells 2,300,000, Hg. 40 per cent, and rest of picture that of pernicious anemia.

Liver extract was administered in gluteal region, 5 c.c., February 18th, second injection February 20th; day after second injection the Hg. 60 per cent, red cells, 3,400,000. Third injection February 23rd; next day Hg. 80 per cent, red cells 3,800,000. Fourth injection February 29th; next day Hg. 85 per cent, red cells, 4,300,000.

I have not seen this patient since that date but understand that she has improved in every way.

In conclusion I would state that from my limited observation on the use of liver extract intra-muscularly I feel that it will be of inestimable value.

Case No. 1 and Case No. 2 would have to have been seen to realize the seriousness of their condition. They were both of the rebellious type as to the ingestion of liver in any form; they could not afford transfusions and would unquestionably have died had we not had the intra-muscular method of administration of the liver to use in their cases. At the present time they are enjoying most excellent health.

Another advantage, as stated above, is that the liver can be used by hypodermic at times to tide them over when they reach the stage when they can no longer take it by mouth. I feel that the solution of liver extract as suggested by me and described above is of value on account of its being so inexpensive.

The textbook states that all cases of pernicious anemia are, as a rule, in an advanced state when they come under observation. This is certainly a commentary on the medical profession. Why these individuals should reach such a condition before diagnosis I cannot understand. In my office hemoglobin and red cell examination is routine, as I have found by long experience that anemia in some form is almost invariably present, and I feel if this simple blood examination were made during the course of the physical examination that many cases of pernicious anemia would be picked up long before they reached this seri-

ous condition. Particularly in view of the fact that the other symptoms are so pronounced and should not be overlooked.

What influence liver has on secondary anemia I am not in a position to say yet but I have several patients at the present time with marked secondary anemia who seem to be improving rapidly on the use of the aqueous extract as suggested by me with no other treatment so I feel there must be some beneficial factor.

REFERENCE

Intravenous Use of Extract of Liver. Castle & Taylor, *J. A. M. A.*, April 11, 1931. Lederle Laboratories.

Farragut Apartments.

TRAUMA OF THE ABDOMEN.*

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Injuries of the abdomen may be classified for convenience as penetrating and non-penetrating. With our increased taxation and improved highway system, non-penetrating injuries of the abdomen as the result of automobile accidents alone, must attract serious thought. In the limited time allotted me, I shall confine the scope of this paper to injuries caused by non-penetrating forces.

Unlike more obvious stab and gun-shot wounds, trauma resulting from blunt forces is usually difficult to diagnose. Injuries showing the least damage to the abdominal wall are generally the most serious, for which the most plausible explanation assumes that if the abdominal muscles are rigid when struck, they catch and break the bulk of the blow preventing great damage beyond. If, however, the abdominal wall is relaxed at the moment of impact the content of the abdomen must reap the maximum harm.

It is interesting, on this point, to note that the stomach and colon are seldom injured, although each holds a fairly superficial location. But they are also both well guarded. Each one is thick walled. The stomach is protected by the lower chest wall and the colon has the benefit of cushioning by the small intestines. Rupture of the duodenum is rare, unless it is diseased. If rupture occurs from injuries, it is usually in the third part where it crosses the vertebra. Traumatic rupture of the normal duodenum is practically always fatal.

*Read before the sixty-second annual meeting of the Medical Society of Virginia, at Roanoke, October 6-8, 1931.

Injuries to the small intestine are more common, owing to their ready exposure, the thinness of the wall and to its relation to the vertebral column. Here, an early diagnosis is important. Certain points may be emphasized as helpful in making these diagnoses whos promptness is imperative. The following case is an illustration from my experience with this type of abdominal trauma:

Case 1.—A child, nine years old, was knocked down on his back by a Ford, which ran over his abdomen. The boy, whom I saw immediately, was found with no marks or bruises on his abdomen. He was shocked. His abdomen was rigid and he complained of pain. Pulse was of small volume and fast. Catheterized urine was negative for blood. X-ray of pelvis and spine was negative. His abdomen was opened immediately and a perforation one inch long of the small intestine was repaired. The abdomen was irrigated and closed without drainage. He made an uneventful recovery.

Case 2.—A man was struck in the lower abdomen by a small piece of timber projected by a circular saw. He was unconscious for a few minutes. On recovering himself his pain was intense. He vomited three times and was taken home and visited by the family physician, who advised him to come immediately to the hospital. He was given ¼ gr. morphine, but the pain continued. He was seen again three hours later by the doctor, who gave him another ¼ gr. morphine. Seven hours after his injury he was sent to the hospital. I saw this patient promptly when he reached the hospital and found no external evidence of injury to the abdomen. He was still suffering intense pain. His abdomen was rigid; pulse 120, temperature 101.2, respiration 24, with an increased leucocyte count (15,000). There was no blood in his urine. The family physician stated that the patient's pulse and temperature were normal when he was first seen. He was operated on at once, through a low left rectus incision. Fecal material was found throughout the abdomen with hemorrhage. The small intestine was cut entirely in half into the mesentery. The laceration was repaired; the abdominal cavity irrigated and closed with drainage. The patient died in thirty hours.

These two cases stress several important facts. Abdominal rigidity, pain, and gradual increase of pulse-rate with change of volume

are the danger signs of abdominal trauma, following non-penetrating injuries.

Rupture of the bladder carries a high mortality. Such injuries are divided into the two classes, extra-peritoneal and intra-peritoneal. Cases of intra-peritoneal injuries are usually accompanied by peritonitis; while extra-peritoneal rupture is followed by cellulitis. Bladder injuries occur more frequently in men, due to their greater risks and to the lesser protection to the bladder in the male. Disease of the bladder and the degree of distention is important in rupture of this organ. It is questionable whether a blow over the bladder would cause a rupture if the bladder were empty. This would not be true of fracture of the pelvis. Urgent desire to micturate and the passing of only a few drops of bloody urine is a most important point in early diagnosis.

Case 3.—A woman, aged thirty-six, was admitted to the City Hospital one hour after an automobile accident.

On admission the patient was conscious, but in profound shock. Examination showed that she had a compound comminuted fracture of the left arm with no other abrasions or bruises. She complained of severe pain through the lower abdomen. The pain was exaggerated on movement of her legs.

Catheterized specimen showed a small amount of blood in the urine. Cleansing and partial debridement of the left arm was done. A Thomas splint was applied. The patient was treated for shock. Six hours after admission X-ray pictures of the pelvis were taken which showed a compound comminuted fracture of the ascending and transverse ramii on the left side. There was slight rigidity in lower abdomen. The patient's bladder was irrigated with boric acid and showed the same amount returned through the catheter as injected.

The patient's temperature the first few days varied from 99 to 100. Fourth day after accident she was taken to the plaster room and a double plaster spica splint was applied. The sixth day her temperature was elevated and she complained of painful urination. Temperature 102 in the afternoon. Urinalysis showed a great many pus cells. A urologist was called, who made a diagnosis of cystitis. The patient continued to have pain from bladder tenesmus and pain on urination. Temperature remained elevated. On the seventh day patient complained of considerable pain and tenderness in left iliac fossa. Cast was removed. Ninth day leucocyte count was 19,000. Temperature 103. Pulse fast.

We saw this patient in consultation nine days after the accident and found a mass in the left iliac fossa, for which we advised incision and drainage. At operation a large abscess was drained, resulting from injury to the bladder and extravasation in urine. Patient continued to get worse and died forty-eight hours later.

Ruptures of solid organs are usually classified as capsular and subcapsular. Injuries to the spleen are not uncommon and with prompt diagnosis the results are generally good. The following is a typical illustration of the successful repair of such an injury:

Case 4.—A middle-aged man was driving a "T" model open Ford to Richmond, when he met a neighbor at a sandy spot in the road. In attempting to slow down he stepped on the brakes too hard. The Ford cut out of the road to the left, throwing the driver over the left front door. He was struck just below the lower border of his ribs on the left side. He was brought to the hospital about two hours after the accident in a state of shock; pulse fast and of small volume. He complained of pain in the region of the injury and in the left shoulder. His abdomen was rigid; leucocytes were high, as usual in cases of hemorrhage. A diagnosis of injury to the spleen was made and upon operation the abdomen was found filled with blood. The spleen was severely torn. A splenectomy was done and the patient's recovery was complete.

The liver is frequently injured. Its location, its fixation and inelasticity are responsible for this. The usual case of injury to the liver is readily repaired by mattress sutures or packing.

Injuries to the kidneys are usually incurred when the body is crushed. If the damage is severe, hemorrhage will be profuse and shock is profound. Hematuria is usually present in kidney injuries, although it should be borne in mind that it is not a necessary finding. An interesting fact about kidney injuries is that emergency operative surgery is rarely called for. Occasionally a nephrectomy may be indicated.

Considering the emergency demands of certain intra-abdominal injuries, it is of first im-

portance to realize that the classical signs and symptoms of trauma are too frequently absent. One must not be misled by laboratory findings. Clinical experience and sound judgment are at a premium for the right handling of intra-abdominal trauma.

Abdominal rigidity is one of our most reliable signs of intra-peritoneal damage. It may be local or diffuse. If the injury is severe, it usually increases; while if the trauma involves only the abdominal wall, the rigidity gradually subsides.

A second trustworthy sign is the state of the pulse. At first, the rate may not be changed, as was shown in Case 2, reported above. If the damage is serious, the tension is always low, the pulse gradually increasing in rate. If hemorrhage is a complication, the pulse tension remains low. When there is no hemorrhage, the pulse improves after the primary shock is over. Pain has been another constant symptom in my cases of serious injury. Of course, we may have slight injuries to solid viscera with little pain. But if the injury is important, pain is always present. Change in respiration, abdominal distention and percussion of the abdomen may or may not be valuable.

On presenting such a subject of universal interest and menace, I wish to emphasize the summary of my conclusions. To the general practitioner: Abdominal rigidity, pain and continued increase of pulse rate are three urgent signals, following non-penetrating blows to the abdomen. To the surgeon: We must not rely too strongly on the house-physician. These cases are serious and it is of utmost importance to the ultimate outcome that they be seen promptly by a surgeon of experience and judgment.

Johnston-Willis Hospital.

DISCUSSION

DR. M. A. JOHNSON, JR., *Roanoke:* I have enjoyed hearing this paper on Trauma of the Abdomen. It is short and to the point. A few years ago a paper such as this, dealing only with injuries to the abdomen by some blunt object, would have been a little out of the way, but today it is a live issue. In this discussion emphasis of the points that have been brought out is well worth while.

Early diagnosis is necessary if one expects a patient to recover. Abdominal rigidity has always been one of our guiding signs in intra-abdominal trouble, whether there is disease or trauma. A quickening pulse with abdominal rigidity is almost pathognomonic. A point which may be misleading is observed in cases with a picture such as Dr. Johns has presented, when under treatment for shock, by morphine, fluids intravenously, or blood transfusions, and heat, the patient improves temporarily, then one or two hours later becomes worse. It is not wise to allow this short period of improvement to persuade us to postpone operation until the second depression occurs, when the percentage of recoveries will be less.

I should like to cite just one case similar in many respects to one Dr. Johns has mentioned. Mr. W. A. S. was brought to the hospital one morning about ten o'clock. The patient was in shock, very tender over the abdomen, and complaining of severe pain in the abdomen. He was given morphine, put to bed and other treatment for shock instituted. Intra-abdominal injury was suspected immediately. This patient was watched closely. He apparently came out of shock, but not quite back to normal; then relapsed into a further state of shock with abdominal rigidity, and quickening of pulse. This patient's abdomen was opened six hours after his admission to the hospital and three holes in the small intestine were found. These were repaired and the patient convalesced without incident. This patient had just the points that have been brought out, abdominal rigidity, pain, shock, and then increasingly weakening pulse. The misleading thing about this case was that he was struck in the abdomen with a board which flew from a piece of machinery and there were no marks whatsoever on his abdomen. However, when incision was made for operation it was found that his right rectus was macerated, in addition to holes in the abdomen.

In closing this discussion I should like to reiterate the points which Dr. Johns has brought out, abdominal rigidity, pain and increase of pulse rate. These are three landmarks of intra-abdominal injury which cannot be overlooked and when these signs are found, conservatism means immediate operation, and even if these signs are not pronounced it is better to be brave, although mistaken, and the rationale of non-operative treatment is questionable.

EARLY DIAGNOSIS OF TUBERCULOSIS IN CHILDREN AND YOUNG ADULTS.*

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Although the mortality rate in general from tuberculosis has been cut in half in the last twenty-five years, this disease is still exacting a great toll of lives yearly. In fact, the mortality rate among young adults is still very high in spite of the fact that consumption was one of the first diseases known to man.

Since the discovery of the tubercle bacillus in 1882 by Koch, an enormous amount of research and clinical work has been done, and volumes written on tuberculosis. Yet, today we have no specific cure in the form of medicines as in the case of malaria, syphilis, and other diseases.

Today, as in the days of Trudeau, the only hope for cure lies in the early diagnosis and

*Read at the sixty-second annual meeting of the Medical Society of Virginia, in Roanoke, October 6-8, 1831.

treatment with rest, wholesome food, fresh air, and sunshine.

The follow-up work over a period of years (1909† to 1922) at Catawba Sanatorium by Nicholls shows that of the patients discharged during this period, 90 per cent of the minimal cases were still living as compared to 67 per cent of the moderately advanced and 33 per cent of the far-advanced. The majority of the minimal cases were making their own living whereas the moderately and far-advanced cases were to a large extent invalids. Yet, sanatoria all over the country are overloaded with far-advanced cases, chiefly on account of delayed diagnosis.

Diagnosis, from the earliest days, has been based chiefly on symptoms. Before the days of auscultation, bacteriology, and X-ray, symptoms and general appearance were the only means of diagnosis. But the symptoms in early cases of tuberculosis are frequently overlooked until the disease has reached the moderately advanced or far-advanced stage. This led to a general feeling of hopelessness in the treatment of tuberculosis and discouraged patients suspicious of tuberculosis from seeking a diagnosis of their disease. Too frequently, the physician has been reluctant about making the diagnosis on this account.

With the perfection of the stethoscope by Laennec, the development of more refined methods of physical examination of the chest was possible; and inspection, percussion, and auscultation in skilled hands become more accurate and valuable in diagnosis. But, the discovery of the tubercle bacillus was the greatest contribution to the diagnosis, treatment, and control of tuberculosis. Yet, however valuable the microscope, it is not a sure fire diagnostician, for often sputum is negative for tubercle bacilli until the advanced stage of the disease is reached.

The use of the X-ray in diagnosis of lung conditions, and especially the development which admits of stereoscopic views of the plates, has proven one of the most important factors in the early diagnosis of tuberculosis. Since the discovery and application of the tuberculin scratch test by Von Pirquet, this has proven very useful in determining the presence of previous infection with tubercle bacilli. However, the intradermal test developed by Montaux is generally considered more sensitive.

†Catawba was opened in 1909.

Notwithstanding all these adjuncts to accurate diagnosis, more or less independently developed and in large measure independently used, it has been most difficult until a comparatively recent period to diagnose tuberculosis in early stages in children and young adults. This has been especially true in regard to diagnosis of tuberculosis in negroes. The proper and orderly application, however, of each of the aids to diagnosis above mentioned will undoubtedly result in the early diagnosis of these cases. This has been clearly demonstrated by the work of Rathburn, Opie, McPhedran, Chadwick, Myers, and others.

For a considerable period of years, we have been conducting tuberculosis clinics in Virginia, depending for diagnosis chiefly on the history and physical findings. The X-ray was used when accessible and series of sputum examinations when obtainable. We have by these methods and by our follow-up work been able to get a large number of tuberculosis cases under some kind of supervision. This has been quite satisfactory for adults but, on account of the inaccuracy of the diagnosis in children, we felt it necessary to seek a more accurate and satisfactory service for them.

The State Tuberculosis Out-Patient Service, therefore, has adopted the method that is used at Phipps Institute in Philadelphia. This is the family study method. There must always be a source of infection, and this is practically always one or more members of the household of the patient during childhood. It is necessary by this method to take each member of the household into consideration in the search for the danger spots.

It is the height of folly to send a child to a preventorium for from three months to a year or more and thereafter return him to the same home and to the same careless contacts that were responsible for the condition that called for his removal to better surroundings. It is far more profitable to send the cases in the home among older people to the sanatorium for instruction and then induce sanitary methods in the home to prevent further infection of the children. For it is realized (as will be shown by illustrations) that the child with tracheobronchial or small amount of parenchymal pathology will usually handle it well if there is no exogenous infection.

In our clinics we act on the knowledge that it is the contact group of children that will

XUM

compose most of the future patients, so these are given the intradermal tuberculin test. They are given .01 mg. of Koch's Old Tuberculin diluted with sterile normal saline solution to make a volume of .1 c c. as the first dose. The flexor surface of the right forearm is used for this. If there is no reaction in forty-eight hours, the same volume of solution but containing 1 mg. of tuberculin is used on the left arm in the same manner. Fresh solutions must be made each day on account of the danger of contamination over a period of time. The reaction is read in terms of edema and redness, and classified as one, two, three, or four plus, depending upon the amount of edema. If any sloughing occurs, it is four plus. If there is redness and no edema, it is classified as questionable and repeated in the opposite arm with the same dose. It is best to us .01 mg. as the first dose, as there is danger of sloughing in an unusually sensitive individual. This is especially true in the negro.

If there is fever, skin eruption, or recent vaccination, the test in contraindicated for in such case there may be interference with a true reaction. The test is also contraindicated in pregnancy after three months.

All the reactors are X-rayed and the plates interpreted by the clinician. These are classified as tracheobronchial or parenchymal, both of which may be active or latent. A physical examination, consisting of general inspection of the body, and palpation, percussion, and auscultation of the chest for signs of pulmonary or cardiac pathology, is made.

The table shows the analysis of 1,251 cases,

TABLE I

ANALYSIS OF 1251 CASES SHOWING REACTION TO TUBERCULIN AND X-RAY FINDINGS OF REACTORS WITH REFERENCE TO CONTACT HISTORY.

History of Contact		Examinations		Reaction to Tuberculin: Positive		Reaction to Tuberculin: Negative		Reaction to Tuberculin: Parenchymal Lesions		X-ray Findings: Tracheobronchial Lesions		X-ray Findings: Suspicious		X-ray Findings: Negative		Negative X-ray and Tuberculin Reaction	
		W	C	W	C	W	C	W	C	W	C	W	C	W	C	W	C
	No.	768	250	471	153	297	97	27	14	202	74	74	25	154	36	451	133
Known	%	79.4	88	61.2	60.1	38.5	38.8	3.1	5.6	26.3	29.6	9.6	10.0	20.2	14.4	58.7	53.2
	No.	76	21	30	4	46	17	0	0	15	1	3	0	13	3	59	20
Questionable	%	7.8	7.39	40	.20	60.5	80.9	0	0	19.7	5	4.0	0	17.1	14.3	77.6	95.2
	No.	123	13	43	4	80	9	0	1	15	2	12	2	23	3	103	12
Negative	%	12.7	4.57	35	30.7	65	69.2	0	7.7	12.1	15.3	9.6	15.3	18.5	23.1	83.5	92.3
	No.	967	284	544	161	423	123	27	15	232	77	89	27	190	42	613	165
Totals	%	77.2	22.8	56.2	56.7	43.7	43.3	2.8	5.3	24.1	27.1	9.3	9.5	19.6	14.7	63.4	58.1

4.4% of reactors were not X-rayed.

TABLE II

PHYSICAL FINDINGS IN RELATION TO DISEASE

Abnormal Physical Findings		Parenchymal		Tracheobronchial		Suspicious		Negative	
		W	C	W	C	W	C	W	C
Imp. Reson.	No.	12	5	134	57	57	15	264	101
Breath Changes or Rales	%	25.0	50.0	11.2	8.8	17.6	6.6	13.0	8.0

from six months to eighteen years of age, that were given the tuberculin tests. A much larger number of whites were examined on account of the difference in population and reluctance on the part of the colored to take advantage of the opportunity. There is no appreciable difference in the percentage of reactors and disease in the two races.

The percentage of reactors and disease is twice as great in the known contact group as in the questionable or negative contact group. This is not as great as would naturally be expected, but can be explained by the fact that we were forced to depend on the history as given by the patient without investigation in a large number of cases. A group in one community, where investigation was made, showed 80, 40, and 20 per cent reactors respectively in the known, questionable, and negative contact groups.

The X-ray revealed the presence of disease in 47.6 per cent of the reactors in the whites and 50.9 per cent in the colored. Of this group only a very small percentage was considered active.

In the follow-up work a small number were X-rayed again, about six months later, and none of these has shown any progressive changes, while a few have shown retrogression. An attempt was made in all cases to control or separate the contacts. While this group is too small to draw definite conclusions, it does indicate that the disease progresses very slowly in children. This is borne out by the fact that the lowest tuberculosis mortality age of man is between two and ten years of age. We were unable to X-ray a small group of the reactors (2.4 per cent) as they were too small.

The tabulation of abnormal physical findings shows a larger percentage in the cases showing parenchymal lesions than those with tracheobronchial ones, yet less than one-half of these show changes, while the percentage of those showing no disease is as great as those with tracheobronchial lesions.

Not included in these tables are eleven cases with no contact history, but were using milk from tuberculous cows as shown by tuberculin tests of the animals. Of this group nine showed negative and two positive reactions to tuberculin. X-ray of the two reactors showed no evidence of disease.

It is interesting to note the small number of cases of scrofula. Of the twelve hundred fifty-one there were scarcely half a dozen cases.

The early symptoms as previously mentioned were of no significance in these cases as they were brought in as contacts or for precaution. In those showing no disease the symptoms were as prevalent as in those with positive lesions. Also a rise of one or two degrees of temperature means little in a child unless it persists for days.

A most important part of the program of the Bureau is an attempt to examine all the adult members of the household from which a case of tuberculosis comes. It is necessary to control all sources of infection to prevent the spread of the disease in the child or young adult. In the adult cases the tuberculin test is only useful in selected cases, and is dispensed with as a routine. It is useful to determine if infection with tubercle bacilli has taken place.

Our experience has definitely convinced us that with the proper procedure tuberculosis can be diagnosed in children in the latent stage, before symptoms are apparent. Practically all these cases do not cough or get up sputum so there is no need of isolation except in cases where this is true. They are as a rule as well nourished as the non-tuberculous cases. It has been found that if all other defects are corrected and they receive the ordinary care due any child, they will usually do well, providing there is no further exogenous infection.

One great value of this work is that the presence of the reaction and the X-ray findings present concrete evidence to the parents of the danger of contact with careless cases of tuberculosis and stimulates them to activity in the control or separation of the case. It also serves as a stimulus to the physician which is often very essential, assisting him more clearly to realize that the child is in danger of developing clinical tuberculosis in early adult or later life. Thus it gives the physician an opportunity and a definite point of contact in his follow-up work to teach the youngster the importance of being on the alert for early symptoms of tuberculosis that may occur in later life and the value of immediate and proper investigation.

We often see patients of middle age who had their first breakdown in their late teens or early twenties and this not recognized due to lack of proper investigation.

Many times, even when the young adult has

been well instructed, we find early cases of tuberculosis on routine examination where the symptoms were overlooked. This serves to emphasize the importance of re-examination of contacts three or four times yearly, and X-ray when in doubt as to the presence of active pathology. It will be found very helpful to X-ray the chest every one to two years routinely when there is evidence of latent lesion or continued contact with careless cases of tuberculosis.

Since it is often difficult to determine the true type of pathology by studying one set of plates, the serial films over a period of months or years are extremely valuable in proper diagnosis and treatment of the disease.

I believe it is very important to tuberculin test all of the children and young adults of high school age. X-ray films of the reactors will reveal early active tuberculous pathology is a small percentage of the students. These will be cases that have been entirely overlooked and can be gotten on the cure before they reach the moderately advanced stage or worse, as so often happens in these young people.

This is especially true in the negro race. It has long been recognized that it is most difficult to make an early diagnosis of tuberculosis in the negro of any age, more especially the younger adult, where the mortality is highest. In the early stages they present few, if any, symptoms and usually atypical if any abnormal physical findings. After there is sufficient pathology to cause toxicity, symptoms will appear, but it is usually moderately if not far advanced at this time. It is true that if they were alert to the early symptoms the cases would be recognized earlier, but too often have I tried in vain to get symptoms, and elicit signs of pathology in a contact case, yet return in three to six months and find a far-advanced case of tuberculosis.

I do not believe that any appreciable number of tuberculosis cases in early stages will be diagnosed in the negro race without the use of tuberculin tests and X-ray as a routine measure. This may seem impracticable but by using the contact group as a nucleus and working in the schools and colleges it could be done to a great advantage.

When the child or adult has begun to run symptoms, such as malaise, loss of weight, cough, expectoration, anorexia, hemoptysis, dyspnoea, and others, it must always be borne in mind that there are diseases other than tuberculosis that might cause the same symptoms. The presence of rales, breath changes, dullness, and other abnormal fiindings in the chest indicate pathology of some type, but taken alone are unreliable as a basis of diagnosis. Likewise, the X-ray alone does not tell the whole story.

In recent years it has been realized to a certain extent that one or two negative sputums do not indicate the absence of tuberculosis, but far too frequently the importance of sputum examinations is overlooked. We recommend a series of not less than ten sputum examinations on all questionable cases, where any sputum is raised. We have found as many as eight negative and the ninth and tenth positive. Not only should the sputum be examined for tubercle bacilli, but for fungi and other organisms. Even after doing all of this it is sometimes necessary if he is running suspicious symptoms to put the patient on the rest cure, while every available means is used to rule out other diseases, and the case kept under close observation for months.

It is clear to me and I hope I have made it clear to you that the diagnosis of early tuberculosis is based on the whole picture and the use of every aid in diagnosis, not by observing any one feature to the exclusion of others. I repeat that the early recognition of tuberculous infection by the use of the tuberculin test in childhood, and the discovery of the presence of latent lesions by X-raying the reactors, is of supreme importance in the early diagnosis, treatment, and control of tuberculosis.

With close observation and supervision of the child to adult and later life, by routine examinations, serial X-rays, and sputum tests when indicated, the family physician will be enabled to make an early diagnosis of active tuberculosis when it occurs and prevent the spread of the disease by that individual, thus rendering service of untold value to the individual and community.

Case Reports

H. B. Family:

H. B., white, father of two children, age 32, far-advanced case of tuberculosis for three or four years or longer. Was in home with children before going to sanatorium. X-ray shows cavities and some fibrosis.

Mrs. H. B. (Fig. Ia), age 27, far advanced tuberculosis with thin walled cavities and no

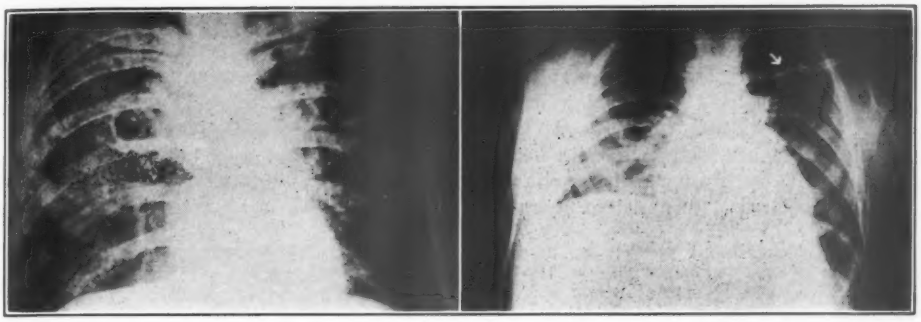

Fig. Ia Fig. Ib

signs of fibrosis or calcium deposit. Died within two years after onset of disease.

A. B., age 4, no symptoms or signs. Two plus reaction with .01 mg. O.T. X-ray (Fig. Ib) shows fan like area of infiltration with some calcium deposits in the parenchyma of the upper part of left lung. Child was separated from parents and in six months returned looking well, with no symptoms or signs and X-ray showing no change in the latent lesion of the left lung.

P. B., age 3, no symptoms or signs and one plus reaction with .01 Mg. O.T. X-ray is negative. Also separated from parents and returns in six months showing no symptoms, physical or X-ray signs of tuberculous lesions.

J. W. Family:

J. W., white, age 36, father of three children. History of cough, expectoration, fever and weakness over a period of three or four years, beginning about 1919 or 1920 and gradually improving up until a year or two ago. Now complains of shortness of breath, weakness and pains in chest, but no cough or expectoration. No abnormal physical findings on examination of chest. X-ray (Fig. IIa) shows numerous areas of calcification throughout both lungs, indicating healed miliary tuberculosis.

Mrs. J. W. is apparently a healthy woman.

R. W., age 11, the oldest boy, came in as precaution, with no symptoms or signs of tuberculosis. One plus reaction with 1 mg. of O.T. X-ray (Fig. IIb) shows latent lesions in hilum region on both sides and in lung field opposite second interspace on right side.

V. W., age 9, no symptoms or signs and one plus reaction with 1 mg. O.T. X-ray shows questionable latent lesions in hilum region.

E. W., age 8, no symptoms or signs and negative reaction to .01 and 1 mg. O.T. Not X-rayed.

Note: It is assumed that the sputum of the

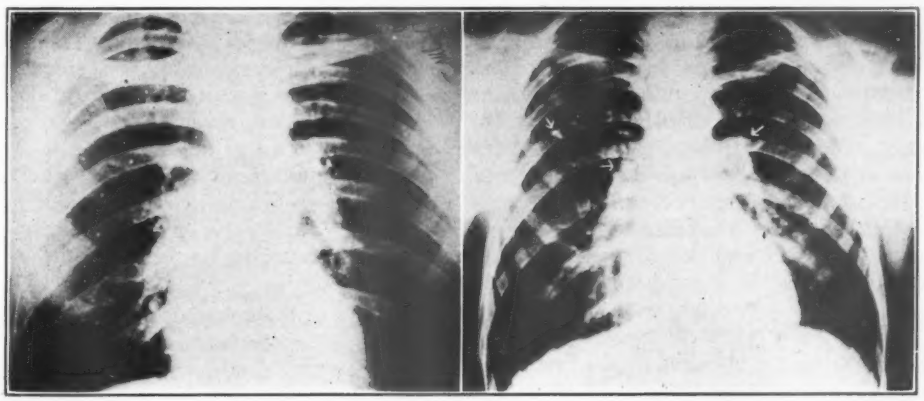

Fig. IIa Fig. IIb

father became negative for tubercle bacilli, before or during the very early life of the younger children, whereas, the older boy had longer exposure during his most severe illness.

I. B. FAMILY:

I. B., colored, father is apparently a healthy man, but his wife, the mother of these children, died with tuberculosis two or three years ago.

Fig. IIIa

G. B., male, age 9, came in as a contact with no symptoms or signs of tuberculosis. Looks well. Two plus reaction with .01 mg. O.T. X-ray (Fig. IIIa) shows latent lesions in hilum region on left side and large lesion right base, that appears to be in exudative stage. Sanatorium was recommended, but being unable to go, he rested irregularly at home. He returned eight months later, having gained five pounds and no symptoms or signs. X-ray (Fig. IIIb) shows some clearing of the basal lesion which illustrates importance of separation of contact.

C. B. and I. B., brothers, age seven and eleven, respectively, showed no symptoms or signs. Both had two plus reactions with .01 mg. O.T.. but no definite X-ray findings.

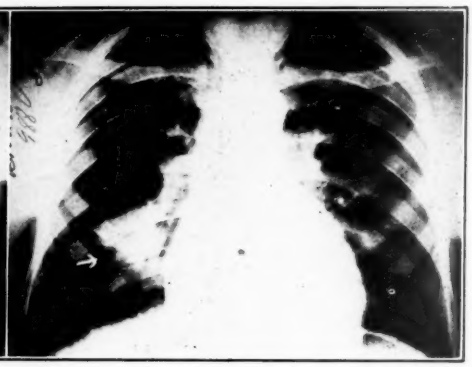

Fig. IIIb

E. B., a grown sister, is a minimal, arrested case of tuberculosis since being treated at Piedmont Sanatorium.

REFERENCE

Nicholls, J. B.: Report Upon the Four Thousand Five Hundred and Thirty-one Patients Discharged from Catawba Sanatorium up to January 1, 1922. *Va. Med. Monthly*, April, 1924.

PHYSICAL FACTORS IN CORONARY OCCLUSION.*

J. MORRISON HUTCHESON, M. D., Richmond, Va.

It has long been customary to think of cardiac pain as angina pectoris and to consider bodily effort as its chief provoking cause. Until recently cases of acute coronary occlusion with pain were usually included under the designation angina unless, perchance, their cardiac significance was missed entirely and some such fanciful diagnosis as acute indigestion supplied. As the distinction between coronary occlusion and other conditions that produce anginal pain is not yet entirely clear, it is not surprising that physical strain is still held to be a factor of more or less importance in the causation of occlusion.

While it is generally recognized that sudden closure of a coronary vessel is by no means dependent upon physical exertion, the possibilities of this factor are accorded considerable emphasis. Thus, Levine, in his Monograph on Coronary Thrombosis writes: "The attack of coronary thrombosis, unlike the typical anginal attack, often is not precipitated by effort. It frequently occurs during rest, while sitting quietly in a chair or during sleep. To be sure, ordinary or more unusual effort is also found to be a precipitating factor." As this question is one of considerable practical importance, I have undertaken to discuss it somewhat in detail.

Coronary thrombosis, whether sudden or gradual, is in the large majority of instances an end result of atheroma affecting the coronary vessels. During this process the lumen of the vessel narrows, the walls become brittle and

*Read before the sixty-second annual session of the Medical Society of Virginia, at Roanoke, October 6-8, 1931.

calcareous plaques appear on the endarterium. These plaques tend to rupture or to ulceration and, with the blood flow already retarded as a result of narrowing, a thrombus is readily formed.

By no means all patients with atheromatous or sclerotic coronaries have thrombosis, though the essential anatomical changes are present. These changes are those usually found in the hearts of patients who suffer from attacks of angina, doubtless the result of vascular narrowing to the extent of rendering blood flow insufficient to meet the demands of unusual exertion or, at times, of ordinary exertion. Attacks of pain induced by exertion and relieved by rest may be looked upon, therefore, as the result of relative inadequacy of the circulation in the myocardium, though the exact mode of pain initiation is not understood.

When thrombosis of a vessel of considerable size forms rapidly, absolute coronary insufficiency results. In addition to pain of anginal character, which is often agonizing beyond description and difficult to control, evidence of structural damage to the myocardium appears together with manifestations of suddenly impaired function. To be sure, occlusions of small branches and even of main coronaries undoubtedly do take place, probably slowly, without producing sufficient cardiac disturbance to permit their clinical recognition.

The attack of angina may be excited in susceptible individuals by several factors other than exertion. Excitement, cold, overeating or tobacco often bring on a paroxysm, probably by increase of heart work and acceleration of blood flow. Just what precipitates a thrombosis is not clear but, if one accepts the pathological background as being a roughening of the intima of a vessel of diminished calibre, further slowing of the blood flow rather than acceleration would be expected to promote clotting.

In order to investigate the question of possible exciting factors, especially physical factors, in acute occlusion from the clinical standpoint, I have reviewed my own private cases and selected 50 patients from whose histories the circumstances attending the attack could be clearly ascertained. Notwithstanding a certain amount of selection, for the reason mentioned, it is believed that these patients represent the picture of coronary thrombosis as it is seen in the average practice.

In this group there were 45 males and 5 females, ranging in age from 30 to 83 years. The age distribution was that usually found with this type of pathology, the largest number occurring in the sixth decade of life. Of the 50 patients 21 died in or soon after the attack and 29 survived.

It is interesting to note that 14 patients had previously had treatment for angina, and of this number the histories in 5 and the autopsy findings in 2 indicated that thrombosis had already occurred previously. Eighteen patients had had mild pain or some type of discomfort on exertion, not severe enough to require treatment, and 18 had experienced no symptoms whatever referable to the heart.

The occupations and habits of these 50 patients were various but the large majority could be classified as those whose pursuits involved mental rather than physical effort, a circumstance that has been observed in the incidence of coronary disease generally. Five had retired from active work, 9 were professional men, including 5 physicians, 2 ministers, 1 dentist and 1 teacher. Eighteen conducted some sort of business such as banks, stores and factories. Five were farmers. There were 2 laborers who did hard physical work. The remaining 6 men consisted of 3 bookkeepers and 3 automobile salesmen. All 5 women were married, had borne children and were actively engaged in managing their homes.

The onset of symptoms, usually pain, occurred in 38 patients, or 76 per cent, while they were at rest, either sitting or reclining. Of this number 19 were in bed and of these 15 were awakened from sleep by pain. Nine patients were walking when symptoms began and 2 were driving automobiles. One patient only, a laborer aged 59 and seeking compensation, connected his attack with exertion. He was resting at home when the attack began but had been subjected to extraordinary strain 3 or 4 hours previously. In his case there was no history of former attacks, though there was evidence of generalized arteriosclerosis without cardiac enlargement of consequence.

No patient gave a history of unusual exertion, of excitement or of exposure to cold at or immediately preceding the time of the attack. In a few instances the attack began soon after an ordinary meal. On patient was attending a picnic, had eaten a hearty dinner,

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and about an hour later, while sitting quietly and comfortably, his pain appeared.

From a consideration of the type of pathology upon which coronary thrombosis depends and from the clinical facts herewith presented, it seems unlikely that exertion or any other cause of accelerated blood flow has any bearing whatever on the occurrence of thrombosis. On the contrary, it appears that slowing of the circulation rather than acceleration would promote clotting. In patients whose coronaries are sclerotic, restrictions of exercise and similar measures, while useful for the control of anginal pain and congestive failure, probably have no effect in the prevention of thrombosis. Theoretically, at least, the use of drugs such as theophyllin to promote coronary blood flow would prove more effective.

Professional Building.

DISCUSSION

DR. J. D. WILLIS, *Roanoke:* Coronary thrombosis comes like a thief in the night, without warning. Dr. Hutcheson's paper calls our attention to an ever-increasing serious condition; that is, sudden death from heart attack. We see it on every hand. It seems to me that a condition that is becoming so rampant should be studied definitely, with recommendations as to how it should be controlled. The prevention of heart disease is one of the big problems before the medical profession today. We are in this age victims of our own efforts and indulgences to such a great extent that education is imperative. It seems to me that more insistence should be laid on periodic health examination, such examination being the keynote to this situation—better understanding of the physiology of human life and the limitations of our efforts and what we can stand. I am not going into the technical discussion of Dr. Hutcheson's paper, for the reason that his coronary findings are well understood.

BIRTH CONTROL.*

WILBUR M. BOWMAN, M. D., Petersburg, Va.

No attempt will be made to cover entirely a subject of such vital importance in the few minutes allotted, as it would be obviously futile. It is merely to bring before the Society in sufficient form certain data gathered here and there in the hope that the impression will be such to cause serious afterthought. The writer is aware of the fact that there is and always will be opposition but the balance of evidence seems to be overwhelmingly on the side of the advocates of the birth control movement. It would be foolish to believe that the medical profession in general would not endorse such a humane and necessary progressive step in the advancement of medical science, yet we have neglected to bring this subject where it rightfully belongs for discussion. It is unquestionably a medical problem first and foremost, but we have remained idle and watched from the side-line as lay organizations have carried on in a magnificent manner. Is it taken for granted that physicians already possess complete knowledge of contraception, or that it can come by instinct or inspiration? This knowledge has to be acquired, though it is not surprising to learn that the percentage of physicians who know little or nothing about scientific contraceptive measures is tragically amazing, especially in view of the fact that in most of our medical schools the teaching of this subject is inadequate or lacking altogether, and our usual medical books are in the same predicament. A physician states that he has had doctors in his office from the West and South and from small urban and rural communities in general who have not heard of, handled or seen any contraceptive device. Is it not just as important for a physician to know how to prevent an undesirable pregnancy as it is to prevent the spread of typhoid fever or the contraction of any other infectious disease? In answer to a questionnaire a physician replies that "it should be no more difficult for a woman to consult a doctor about prevenception than about indigestion. There is nothing indecent, obscene, illegal, or unethical about one more than the other." The subject is not new by any means, as we find it being practiced as early as the thirty-eighth chapter of Genesis, 8, 9, and 10 verses. The New Testament speaks of a eugenic program more drastic than modern advocates of birth control would care to support. A few years ago the subject was taboo both socially and professionally, but now this attitude has entirely changed. The movement has increased to a world-wide extent and is destined to become a part of our National health programme. Prominent men of science, literature, and public affairs have endorsed and given their support to the birth control cause. Forty-eight medical societies have endorsed it as well as prominent religious, political, social, and educational groups. The public evidently wants this advice as evidenced by over a million letters received by Margaret Sanger from women, mostly mothers.

*Read before the sixty-second annual meeting of the Medical Society of Virginia, at Roanoke, October 6-8, 1931.

The American Birth Control League was founded by Mrs. Margaret Sanger in 1921. "It is the League's purpose to make birth control information generally available, particularly among the poorer classes, and so to bring about the reduction of maternal and infant mortality, of hereditary diseases, of criminal abortions, and of prostitution. In its educational aims it is especially desirous that families be as large as possible within reasonable limits of health, finances, eugenical fitness, and other considerations. Birth control in this sense is a means of spacing children and not a means of preventing families." In 1923 a clinic was located in New York City, and to date over 20,000 women have been given contraceptive advice here alone. In this country fifty-eight clinics are established. There are seventy well organized centers throughout the world and 250 other centers. Birth control methods are freely used in England, Holland, Norway, Sweden, Austria, Russia, Germany, and Japan, while clinics are now operating in India and China. Holland has had legalized birth control since 1878. The British government now allows such instruction to be given at all its Maternal, Infant, and Welfare Centres. The Public Health Department of Los Angeles has already established eleven clinics, making this knowledge available to the mothers who seek advice. That all religious groups are represented is evidenced by the fact that of the 1,340 cases reported at the Illinois clinic, 782 belong to one or another Protestant faith, 391 were communicants of the Catholic church, 146 were Jewish, twelve orthodox Greek, and only nine gave no religious affiliation. It can hardly be claimed that women apply to these clinics in order to shirk motherhood, for among the thousands of applicants the average number of pregnancies is four, of living children three, and nearly 25 per cent have five or more living children.

"In the United States most clinics giving contraceptive advice are limited by law to accepting cases with medical conditions or histories which would make pregnancy inadvisable for health reasons. In a few States such advice may be given, in the absence of special restrictive legislation, for social and economical reasons." Virginia (according to a letter from the Attorney General) has no laws in regard to birth control and no attempt has been made to pass any. The State of New York has a space law—that is, contraceptive advice may be given to any mother whose offspring is not over one year of age regardless of her physical condition. The Committee on Federal Legislation of Birth Control is attempting to lift the Federal legal bans prohibiting the dissemination of contraceptive information through the mails. Mrs. Sanger explains the situation as follows: "We have twenty-six States in which there is no restriction in giving or getting contraceptive information by anyone. In addition, we have eleven States which allow physicians to give such information (provided they already have such knowledge to give). Yet the Federal laws make it a crime for doctors in these same States to use the United States mails, or common carriers, for contraceptive supplies, books, or pamphlets, which means that the doctor, in giving oral information, must 'bootleg' supplies for the use of his patients and 'bootleg' books or reports by which he could improve his knowledge." This law obviously has a bad moral effect and has perhaps done more to cause a feeling of guilt about birth control and discourage interest in the movement by the medical profession than anything else. That the Federal law does not interfere, however, with practical and constructive work is evidenced by the successful functioning of the fifty-eight clinics. Dr. J. W. Williams (Professor of Obstetrics, Johns Hopkins University, and Obstetrician-in-Chief to the Johns Hopkins Hospital) states: "I feel very strongly that our State and National laws should be amended so as to make it possible for physicians to prescribe contraceptive means with the same freedom and decency as any other prophylactic or medical device, and I resent very strongly the attempt of the Government to interfere in this respect, as I regard it as an unwarrantable aspersion against the integrity and bona fides of the medical profession." Dr. William Allen Pusey (former President of the American Medical Association) says, "The first prerequisite to satisfactory study of any subject is free access to knowledge of it, and that necessitates the unrestricted interchange of experience and information among scientific men. That is not allowed now upon the subject of methods of birth control. We are not even in a position where we can freely determine the merits and demerits of the sub-

ject. It is not that methods of birth control are not discussed and practiced; they are everywhere. But the facts, and the fiction, are passed from individual to individual—ignorantly, crudely, unsatisfactorily, and in ways that are often vicious. It is only scientific, decent discussion of the subject that is prevented, the sort of discussion that is necessary and can only be had, when it is untrammeled, among self-respecting men, who can bring to its consideration knowledge and wisdom. This situation is medieval. From the history of similar situations in the past it cannot be doubted that it must in time give away. To see that this is brought about as quickly as possible is a thing worthy of the vigorous efforts in that direction that are now being made."

The term "birth control" is sometimes erroneously taken to mean many things, as criminal abortion, "no-child" marriages, prolonged sexual abstinence, etc. "Prevention or control of conception" would perhaps be better terms to use. There are various means as:

1. Continence (total abstinence or self-control) which should never be generally recommended.
2. Sterilization.
3. Chemical and mechanical methods suitable to each individual case.

Because the terms are often confused by the laity and even somewhat linked together by physicians, it should be stated that birth control and abortion are entirely different. Abortion destroys the already fertilized ovum or interferes with its development, while contraception prevents the union of the two cells, thereby preventing conception from taking place.

The justified need of birth control is obviously widespread. Nearly every married couple in average circumstances passes through a period when the birth of another child would be a family disaster. Such need may be seen in the case of the poor, where children are born too frequently—and they are the ones the advocates of birth control are particularly anxious to reach. Especially is it needed in the cases of mental and physical deficiency. At present there is a serious problem of maternal mortality confronting all of us in this great and enlightened country of ours while our infant death rate is excessive and not to be boasted of. Sad and unfortunate it is that the United States is given the credit of having had since 1924 the highest death rate from childbirth of any civilized country in the world—an almost unbelievable fact. As Will Rogers recently stated, "The way we lose 'em here it would be safer, if you are figuring on having a baby, to go to some uncivilized country like India or Africa to do it." Present at a dinner in New York were a number of prominent women, including Mrs. Sloan, Mrs. Theodore Roosevelt, Sr., Mrs. Hoover, Mrs. Lindbergh, and Kermit Roosevelt's wife, all to arouse not only interest but horror in our unbelievable maternal death rate. Lieutenant-Governor Lehman, in an address before the annual conference of health officers and public health nurses of New York State, called for closer cooperation to cut maternal fatalities, and stated that the problem was being treated "far too lightly." A newspaper article quotes a Canadian rector as saying he "could not permit women to go to their deaths from bearing too many children because doctors and governments will not inform them." He had announced that he would give birth control information to any young woman of his parish about to be married. Believe it or not, there has been no apparent improvement in maternal mortality in the United States during the past decade. Yet it is definitely acknowledged that a large proportion of sickness and mortality during pregnancy, labor, and puerperium is preventable. Statistics from Holland show that since 1878 there has been a gradual lowering in the rate of deaths among mothers and children, a reduction in the proportion of stillbirths and abortions. Tables of maternal mortality give Holland a place at the top and indicate that three times more mothers' lives are saved there than we can claim for this country. It is obvious that diminished childbearing diminishes the opportunities for deaths from pregnancy and puerperal complications. In other words, statistics readily show that maternal mortality increases with the number of children born, starting with the fourth offspring and reaching the maximum at the eighth and later. Multiparity cannot be overlooked even though faulty obstetrics appears responsible. Just recently while attending the case of a young woman in labor, a notice was received from Philadelphia that her mother had just died at the age of thirty-four years with her thirteenth baby.

Experience has demonstrated that the mortality rate for infants is higher for those born at short intervals after preceding births. Statistics from the Childrens' Bureau, United States Department of Labor, show that as the number of years between births increase up to four, the infant mortality rates decrease. It is an important fact to know that those nations possessing the lowest birth rates manifest likewise low infant mortality rates and low general death rates. Wile states that "this fact is indicative of a wholesome state of affairs even though it may lead to a slower natural increase in population of communities. The difference between the birth rate and the death rate is significant in that it represents a far higher health value to have a diminished birth and death rate in place of the older types of high birth rates and correspondingly high death rates. The gain to the public is obvious in terms of the decrease of deaths, economic loss, familial anxiety and communal distress." With proper regulation of reproduction, such as reliable contraceptive measures could accomplish, this unnecessary waste of human life and energy could be greatly diminished.

Ignorance of contraception is a fundamental cause of abortion. There has been a notorious increase in the number of abortions in the United States, estimated to be over a million a year, and resulting in a large percentage of deaths. This clearly proves that women will resort to abortion in the absence of reliable birth control information. "Particularly striking is the number of induced abortions admitted by patients seeking contraceptive information from the Clinical Department of the American Birth Control League, N. Y. C.," says Hannah M. Stone, M. D., in the director's report for 1925. "These totaled 1,434, varying from one to as many as forty abortions in one particular case." Dr. Abraham J. Rongy, chairman of the Greater New York Committee on Health Examination urges that legalized birth control information be supplied to all who want it in order to discourage criminal operations to prevent child birth. He declares that 1,000,000 such operations are performed every year by physicians in the United States, and 250,000 by others not physicians, and the cost to the victims is $100,000,000.

Time will barely permit the writer to more than state briefly, without discussion, certain fundamental facts (not already mentioned) concerning the relation of population pressure to control of fertility as given by Burch in his very interesting article on "Population Pressure and Birth Control." These may be enumerated as follows:

1. High birth rates and large families are generally accompanied by poverty.
2. High birth rates and large families are generally accompanied by ignorance and illiteracy.
3. Uncontrolled reproduction is generally accompanied by bad housing.
4. Uncontrolled reproduction is generally accompanied by unemployment.
5. Uncontrolled reproduction is generally accompanied by undernourishment.
6. High birth rates and large families are generally acompanied by child labor.
7. Uncontrolled reproduction and large families are often the incubators of disease.
8. Uncontrolled reproduction is a fundamental cause of crime resulting from both environment and heredity.
9. Continence is neither a practical nor normally desirable method of birth control.
10. Ignorance of contraceptive information is a fundamental cause of what is called the "anxiety neurosis."
11. Continence-in-marriage and ignorance of contraceptive information are fundamental causes of infidelity.
12. Ignorance of contraceptive information is a fundamental cause of illegitimacy.
13. Ignrance of contraceptive information is a fundamental cause of infanticide and abandonment.
14. Ignorance of contraception is a two-fold cause of prostitution.
15. Controlled reproduction has a tendency to stimulate the marriage rate and increase the marriage population.
16. Knowledge of contraception will enable married couples to live a more normal sex life.
17. Ignorance of contraceptive information causes population pressure that leads to social unrest and war.
18. Ignorance of contraception is a fundamental cause of famine and pestilence.
19. Knowledge of contraception will improve the race.
20. Knowledge of contraceptive information will strengthen rather than weaken morality.

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21. Nowhere in literature or history are the terrible evils of population pressure and the need for contraceptive birth control brought out more forcibly than in the Bible.

Now that contraception is assuming its place in the rank of preventive medicine, it is hoped that physicians will avail themselves of this knowledge so that when women seek advice they will be in a position to consider all the circumstances in these cases and allow themselves to be guided by their social, ethical, and humanitarian instincts as well as their scientific, medical judgment.

In closing this article, the writer wishes to pay tribute to the memory of Dr. James F. Cooper—who did so much to bring the subject of birth control in a personal way to thousands of his colleagues—by using his own words, as follows: "The ideal conditions will exist when scientific, effective contraceptive methods are as freely available to the poor as the rich; when physicians will have no legal restrictions in giving advice, and women will have no embarrassment in receiving or using contraceptive measures; when children will be conceived only when the physical and mental health of the parents and the social and economic outlook are such that the new generation will have a fair chance for a normal life."

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3. The Research Department of Holland-Rantos Co., Inc.: Report on Physicians' Replies to Questionnaire Concerning Their Experience With the Vaginal Diaphragm and Jelly.
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5. Birth Control Clinical Research Bureau.

123 *North Union Street.*

DISCUSSION

DR. W. B. MCILWAINE, *Petersburg:* I was going to make a different kind of discussion on this paper, but, seeing that Dr. Bowman was cut short, I will tell you what they are using in the prevention of conception. By the way, I feel that birth control is a very bad name to come before a medical society. That is the term used by the laity. I think medical men should use the term "control of conception."

In these clinics they are using, with practically one hundred per cent success, a diaphragm pessary, with lactic acid jelly. The diaphragm pessary is fitted by the doctor in his office or at the clinic. In my opinion, this service should be available at every clinic, for it is the poorer class of patients who have so many children, who can not get this advice from their private physician. In the clinic, or in your private office, teach the woman how to insert this pessary. The use of lactic acid jelly with the diaphragm will prevent in practically all cases. This is being used in the larger cities and among the poorer classes, where the responsibility rests primarily upon the woman. These pessaries can be obtained in the larger cities, but, as you know, the Federal Government will not allow us to send them through the mail. If any physicians here are interested in this life-saving method, they can get in communication with Dr. Margaret Sanger, of New York City, and other interested people.

I do not feel that I am competent to discuss this subject, except that I feel it should be brought before the medical profession in the spirit of leading the laity and looking toward the future. I believe you would agree with me if you could see these women as I do, coming to the office with seven or eight children, and looking as if they are on their last legs. They say they do not feel they can have any more children, from the standpoint of economics, and they do not know where to go for advice. I think every physician should have the information at his command and be able to give a woman contraceptive advice. The physicians, I think, should be in position to take the leadership in this movement, which will inevitably come.

EPIDEMIC ENCEPHALITIS.*

JOHN R. GILL, M. D., Petersburg, Va.
Central State Hospital.

Epidemic encephalitis was first described in 1916-17 after an epidemic of this disease had occurred in Vienna and France. Von Economo is best known of the men who first described the disease. He called it lethargic encephalitis. Since that time the disease has become world-wide in importance and epidemics have occurred in every country of the world. The first epidemic of encephalitis followed in the wake of the great influenza epidemic which swept over the world.

The disease occurs more frequently in young adults but it has also been observed both in the very young and old. In one British series 25 per cent of the patients were between the ages of ten and twenty. The incidence of the disease showed a marked decline after the age of forty. Both sexes are equally affected.

There is a definite seasonal occurrence and the majority of the cases occur in the first quarter of the year. The peak is usually reached in February or March. It occurs more frequently in the town than in the country, which is probably due to the close contact and the greater opportunity for transmission.

The mode of transmission is not absolutely known but personal contact is sometimes responsible. This view is supported by the three following facts: There is a restricted distri-

*Read before the sixty-second annual meeting of the Medical Society of Virginia, at Roanoke, October 6-8, 1931.

bution of cases in the small community and multiple cases have been known to occur in families; also new born children are infected either in utero or after birth by mothers who have the disease.

The incubation period has not been definitely learned but it is usually supposed that it varies from two days up until two to three weeks.

The cause of epidemic encephalitis is unknown. Some investigators believed that an ultro-microscopic filterable virus is the cause of encephalitis. Flexner seems to have disproven this claim. Rosenow claims that encephalitis is caused by streptococci but he has failed to prove his case. Other workers think there is a definite relationship between influenza, herpes febrilis, and encephalitis. It is possible that mutation of some of these causative agents is responsible for encephalitis.

The pathology of encephalitis is more or less characteristic of a toxic infectious condition. There is a perivascular infiltration of lymphocytes in the brain with an occasional small hemorrhage. Large subarachnoid hemorrhages have been described but these are rare. There is some chromatolysis and degeneration of the ganglion cells. In chronic cases there is considerable proliferation of the glial cells.

The chief lesions of encephalitis are usually located in the upper part of the mid-brain, the basal ganglia, the pons and the upper medulla. The cerebral cortex is comparatively little involved. The spinal cord is occasionally infiltrated but more frequently is not involved.

The symptoms of acute encephalitis are many and varied. The first signs or symptoms depend upon the site of the initial lesions. There is usually nausea, vomiting, headache and pains in the back and limbs. There may also be a mild delirium and blurred vision.

Fever is only present during the acute stage. The patient's temperature ranges from 99 to 101 Fahrenheit. Occasionally the temperature will go much higher in the severe cases. Headache occurs in the majority of the patients. The headache is usually mild.

Lethargy is one of the most constant symptoms of epidemic encephalitis and led to its being called lethargic. In this case the patient will feel very drowsy and gradually become comatose. The patient could be aroused from the coma and be made to answer questions or carry out commands and then would immediately fall back into a stupor the moment he was left alone. In some cases insomnia takes the place of lethargy and the patient is unable to sleep.

Delirium is the most common of the mental disturbances of the acute stage and frequently occurs with excito-motor symptoms. It is characterized by the clouding of the consciousness and disorientation. Excitement and mental exaltation may be present without clouding of the consciousness.

The focal symptoms vary from patient to patient. The ocular disturbances are the most constant. Diplopia is the chief symptom. The pupillary disturbances are very common. Irregular and unequal pupils with impairment both to light and accommodation are the usual findings. Paralysis of the external eye muscles is common. Those muscles that are supplied by the oculo-motor nerves suffer most frequently. The external rectus muscle is the most commonly affected. Blurred vision is a very frequent complaint, and probably occurs in 50 per cent of the cases.

Facial weakness is very common and may be either unilateral or bilateral. Vertigo is present in a majority of cases. In some cases vertigo is due to an involvement of the vestibular tract and is associated with an unsteady gait and nystagmus. Choreiform movements occurred much more frequently in the earlier epidemics than recently. It was usually found in those patients who showed marked mental excitement. The choreiform movements in epidemic encephalitis differ from those in chorea as there is an absence of facial grimacing. Myoclonus or muscular contractions occur very frequently. The muscular twitches occur in individual muscles and not in muscular groups simultaneously. The contractions may vary from eight to eighty a minute. Hiccup occurs occasionally. There is a record of one case of encephalitis which hiccuped eight days at the approximate rate of 120 times a minute.

Numerous sensory disturbances occur in encephalitis. The sensory pain is produced by the infiltration of the posterior roots. Spontaneous pains are frequently very severe.

The reflexes are very variable, depending upon the situation of the lesions. The tendon and abdominal reflexes are frequently diminished. However, there have occurred cases where the reflexes were exaggerated.

The number of cells in the spinal fluid is

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increased and frequently ranges from 10 to 100 per cubic centimeter. The cells are usually mononuclear. There may be an increase in the globulin, the sugar content and pressure. There is occasionally a luetic gold curve.

The course of encephalitis is either acute, subacute or chronic. Less than 28 per cent of the patients die in the acute stage. Some of the patients recover from the acute illness within a few weeks. In majority of the cases the disease runs a chronic form. The prognosis as to permanent recovery is rather poor. At least 60 per cent or 70 per cent of the cases show residual signs and symptoms. The residual signs and symptoms are far more tragic and incapacitating than the acute illness. There is abundant evidence that lethargic encephalitis is a chronic disease and its later manifestations are due to progressive action of the virus on the nervous system.

In chronic encephalitis the ocular abnormalities may be the chief physical signs. It is a common thing to find inequality of the pupils and an impairment of the pupillary reflexes for light and accommodation. There may be a slight ptosis of one or both upper eyelids. There may be a weakness of conjugated movement. Oculo-gyral spasm occurs frequently. This consists of attacks of spasmodic ocular movement usually upward. In the language of the patient her eyes get caught and she is unable to look down. It is an upward spasm of the eyeballs. The spasm usually lasts for half an hour.

A large number of chronic encephalitic patients develop into the Parkinsonian syndrome. The Parkinsonian syndrome is very insidious in its onset. The symptoms of which the patient first complains are slowness of movement, stiffness and weakness. The Parkinsonian attitude is usually described as one of general flexion. The neck is usually flexed and helps to produce a concave anterior curve of the spine. The upper limbs are adducted at the shoulder and flexed at the elbow. The lower limbs are flexed at the hip and knee.

The facial expression of the Parkinsonian syndrome is staring and expressionless. All of the normal expression of the face is "ironed out" and the wrinkles produced normally by a change of expression are not present. The face is mask-like. The mouth is open in about one-third of the cases and in these the saliva may run from the lower lip.

There is muscular hypertonia or muscular rigidity present which varies according to the severity of the disease. A characteristic feature of the Parkinsonian rigidity is the so-called cog-wheel rigidity. This is due to the interrupted character of the resistance encountered on rapid passive movements, and the stretched muscle will yield in a jerky manner as though the contractions alternated with the relaxations. There is a decrease in the voluntary power and weakness of the muscles. The patient shows a marked tendency to fatigue.

Articulation and phonation are both impaired. Weakness of the lips, palate and tongue lead to a slurring of the consonants and produce a marked monotony of the voice.

The gait is of a slow shuffling type. The person is frequently unable to stop quickly when pushed forward or backward. There is a decrease of the arm swing on walking.

Involuntary movements frequently occur in chronic encephalitis. Choreiform movements are more common in the acute stage but they occur as a late manifestation. Myoclonic movements usually occur. These consist of involuntary contractions of different muscles of the body. Tremors also occur. The tremor is usually inconspicuous when the patient is dressed. However, voluntary movements will bring out marked tremors. The tremors may be localized to an upper or lower limb or may be widespread over the body.

There may occur some abnormality of the respiratory system in chronic lethargic encephalitis. Changes of the respiratory rate and rhythm are frequent. Respiratory tics such as yawning, sniffling, spasmodic coughing and spitting may occur.

There are frequent disturbances in the sleep mechanism. The patient may suffer from lethargy or insomnia or both. The lethargy or insomnia is usually marked. Hall and Yates found that whatever form of sleep disorder was present in the acute stage of encephalitis was the form most likely to be present as a chronic symptom.

Metabolic and endocrine disorders occur. The most frequent abnormality is obesity. This is often associated with atrophy of the ovaries and testicles.

Epidemic encephalitis occasionally produces convulsions of an epileptiform nature. The convulsions do not occur very frequently.

The mental change which follows encephal-

itis is one of its most tragic manifestations and may simulate several types of psychosis or a neurosis. In the adult there may occur maniacal outbursts or marked depression. The depression is fairly common and many of the patients become definitely suicidal. The most frequent mental condition is one of emotional impoverishment in which the patient loses his former interests and is contented to spend his time idly. The patient may have an anxiety neurosis during which he complains of marked fatigability, inability to concentrate and nervousness. The patient often knows of his inability to concentrate. The rapid onset of fatigue and lack of attention is easily noticed in applying intelligence tests.

The character changes are very marked. These changes seem to originate in a state of irritability and a lack of inhibition. These factors help to produce an impulsive character which becomes fixed by habit or the development of a psychoneurosis. They are also emotionally unstable. Their abnormality in behavior varies from committing minor offences to acts of violence. They have frequently committed both petty and serious crimes which may vary from stealing a bottle of milk to that of committing murder. They frequently are guilty of sexual offences. I know of one case who assaulted his own mother and committed sex offence upon her. Due to this marked change in character and disposition many upright and leading citizens become criminals. It is necessary to confine many of these patients in institutions where they will be unable to commit crimes.

The prognosis of epidemic encephalitis is extremely grave. The mortality is in the neighborhood of 40 per cent. Only one-fourth of the patients who survive the acute attacks recover, and chronic progressive lethargic encephalitis is one of the most tragic conditions that is met with in medicine.

The treatment of the epidemic encephalitis is largely symptomatic. During the acute stage lumbar puncture is indicated as a diagnostic and, in some cases, as a therapeutic measure to relieve the increased pressure of the spinal fluid. The patient should of course be confined to the bed. Since it is likely that encephalitis is due to a filterable virus, it is wise to use potassium permangate solution to swab the mouth and naso-pharynx. The intravenous injections of various antiseptic solutions such as urotropin, acriflavine, etc., have been used extensively. Sodium salicylate and various heavy metals such as argotropine and orargol, have been used intravenously. For restlessness of the patient luminal or veronal may be given. The use of non-specific protein has been tried in the acute stage.

For the chronic stage hyoscin hydrobromide is beneficial in doses of 1/100 to 1/150 of a grain daily for reducing the muscular rigidity. Stramonium has been given for the same purpose with beneficial results.

Massage will often make the patient more comfortable, and tends to keep the body in a good physical condition.

The mild cases of chronic lethargic encephalitis may be kept at home under constant medical supervision. The risk of the depressed encephalitic patient committing suicide must always be kept in mind. It is necessary to commit the cases with mental symptoms to an institution for care and treatment.

Discussion

Dr. D. C. Wilson, *University:* Encephalitis, from an etiological standpoint, is the most interesting of the organic diseases, because its effect on the brain produces so many conditions that are similar to the so-called functional psychoses or mental derangements. Dr. Gill, being located at the Central State Hospital, is in position to study these mental changes and it is certainly very stimulating to see a man in his position who has made a study of these cases. In practice at large it seems to me that the most interesting thing is that encephalitis has changed in character and that now we do not see so often the gross sequelae that we did in the past. At the present time a great many milder cases are being seen, and it is pretty well decided that such things as torticollis, tics, generalized twitchings, etc., which formerly were thought to be psychic in origin are due to a previous encephalitis. When we find a person with muscle twitchings in different parts of the body that seem to have no organized foundation, we must suspect previous encephalitis. Also, these peculiar mental changes that come on are often secondary to a basic ganglion involvement.

The child's reaction in encephalitis has had a great deal of work done on it. Just what is the reaction in the adult in encephalitis? It seems to me, although I have not had the experience of Dr. Gill, there are two extremes, we might say. In the first place, there is the patient who is so involved in his disease process that he shows deterioration of personality, becoming a moral delinquent. Then we have the other type of individual who is handicapped by his disease to such an extent that his personality breaks down, and we get the type of mental change which follows personality break-up. So we get two types of psychosis following encephalitis. But the most important thing is that many of these people going around with certain twitchings of one kind and another, as well as a certain slowing up in thought, are not due to some mental disorder, some complex perhaps, but are due to a previous disease.

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DONT'S IN DERMATOLOGY.*

J. BEVERLY DESHAZO, M. D., Ridgeway, Va.

A great many members of the medical profession call skin diseases very simple things unless they become afflicted themselves; however, when ninety-nine out of every hundred have one or more at some time of their lives they loom up in importance. There are around two hundred that are likely to appear single or in multiple in the practice of any general practitioner, and a prescription must be given or he is rated a poor doctor by the patient. It is a duty not to add to their suffering, and how to proceed is the object of this paper.

In diagnosis it is common with many not to see but little of the surface when half if not the entire body should come under observation. Failure to make a note of symptoms is too frequent with a great many physicians.

Habits, occupation, diet, exposures of the patient, as well as the color, feel, odor, location, whether worse day or night—indeed, whether a disease at all, or an eruption from treatment—enter into the consideration of too few giving professional services.

Frequently there is more than one disease present, several at times, and it is difficult to name the fundamental malady. A case of scabies often causes an urticaria that overshadows the first and, if neglected, an eczema may follow because the primary cause remains, years of horrible existence following this mistake. One case in a nearby city in North Carolina baffled the leading physicians for six years.

Weak applications of drugs affect blonds and children much more than the others. Going over one-third strength for young children in local medication is far too common an error, and over half strength with strong drugs becomes decidedly cruel in a large majority of acute inflammations of delicate skins.

Except in infectious disorders, it is wrong to depend upon external applications alone because nearly all acute inflammations have an internal fundamental cause. So important is this if uncertain what to do, it is far better to treat the case generally as if no skin disease was present and use none or the very mildest external remedies.

It is an error, too common, to prescribe arsenic often in this field because acute diseases are generally made worse by it. It is really one of the best drugs in use today when indicated, but the specialist rarely prescribes it because of its limitations.

The novice who uses vaccines promiscuously is going on a long venture as the latest books and journals on the subject, as well as the leading dermatologist who have been using them, are not lauding them to the skies as formerly. They have a field, but not a very inviting one for the general practitioner.

If desiring a speedy cure, it is an error to give a patient anything to use that hurts worse than the disease. Better make test at the office and play safety first and retain the patient by doing this.

A prominent doctor once stated his knowledge of skin diseases amounted to what oxide of zinc ointment would cure and what it would not cure. If doctors generally appreciated his broad sympathy and good judgment tens of thousands of burnt skins from drugs would be avoided.

A very common mistake is to try one remedy after another to see if a cure can be effected by some lucky strike. If no better reason can be found, it is far better to refer these unfortunates to one more conversant with such troubles and trust finances to a higher plane.

Most of the worst cases of dermatitis that finally find their way to specialists are caused by the application of too strong drugs or of medicated soaps sold throughout the country. Frequently days and days are required to get them well of the damage done by the drugs before beginning treatment of the disease.

It is a great mistake to apply acids on corns and warts, as the day has arrived when these can be gotten off without pain. The same can be said with more emphasis of arsenic and zinc chloride to cure cancers.

Unless positive of the action on the skin, it is bad policy to use freely applications of any strong acid or alkalies, salicylic acid, phenol, chrysarobin, zinc chloride, mercurials, sulphur, and arsenic.

Listen, phenol may cause a necrosis if not applied carefully, and the local application of zinc chloride too near is certain to cause a severe urethritis; zinc oxide on hairy surfaces often causes a folliculitis; acids often cause scars you can never hide or forget; chrysarobin near the eyes will precipitate a conjunctivitis and on the hair it produces a purple color that is hideous; and sulphur, as harmless as

*Read at the sixty-second annual meeting of the Medical Society of Virginia in Roanoke, October 6-8, 1931.

it is supposed to be, if used too freely, will cause a dermatitis that is very painful and may peel off the skin in tender places.

In chronic as well as in many acute diseases, if a cure is being effected very slowly, do not change the treatment in your impatience to get a faster one, because the experience of thousands of others teaches that great errors are the result of not letting well enough alone.

This is indeed a day of lights and rays of many descriptions. Scores and scores of physicians are caught regularly through the mails with very plausible propositions. Most of those who have made purchases are getting over their delusions. In fact, in this day of high-pressure salesmanship too many doctors are buying these wonderful lamps supposed to give out rays reputed to increase their incomes tremendously by cures promised not only in big head-line advertisements but also in vocal tones of the salesmen that stamp the doctor almost a moron unless he buys one. The careful general physician will go slow when he learns that the most popular, the ultra-violet rays, are used less and less by the specialist because the number of permanent cures by them in the hands of experts are so few that it will certainly not pay the general physician to make the investment in any of them on the market today.

The X-rays are the best addition to treatment in recent years but it is wrong to begin with this method unless skilled in the dangers in application as well as the benefits of such treatment. Since bad results may not appear until a year or more after treatment, the public, as well as the doctors, should be warned of the danger of loss of hair, of voice, not to mention burns and disfigurations of face and body that last a lifetime, because they can never be restored to normal.

It may be recorded, in passing, that, since dermatology is based on cures that are indisputable, it is one of the few specialities never infringed on by doubtful cults and so-called Christian scientists.

Poets, artists, musicians and dermatologists are born. Unless one has been blest in this field the road in dermatology is hard indeed. As evidence of this, see the havoc wrought by doctors who mean well but study little, who too often give too strong remedies, or listen to reports of proprietary drugs, patent lights or of machines that give out rays—some bad, a few scientific—they try out on their confiding patients, very often with disastrous results.

Taken in time, there is a cure for nearly every skin disease found in this country. Do not forget that the physical and mental suffering is intense and rarely appreciated in full measure. Duty demands in this day a cure be effected promptly, or else it is unpardonable not to refer them to those who love the practice and are qualified to restore them to health and happiness.

If I am able to arouse more care in handling these unfortunates in the future by the general practitioners, I will be thankful for this opportunity.

Woman's Auxiliary, to the Medical Society of Va.

PRESIDENT—*Mrs. J. Allison Hodges*, 5511 Cary Street Road, Richmond.
PRESIDENT-ELECT—*Mrs. W. P. McDowell*, Larchmont, Norfolk.
SECRETARY—*Mrs. James K. Hall*, 3011 Seminary Avenue, Richmond.
TREASURER—*Mrs. Reuben F. Simms*, 2034 Park Avenue, Richmond.

Cordial Cooperation.

The Woman's Auxiliary to the Richmond Academy of Medicine recently requested the privilege of assisting the Academy in furnishing the two Lounge Rooms in the new Academy Library Building, now under construction, and to be opened in Richmond, Va., next Fall.

This request, after having been considered and approved by the Building Committee and the Board of Trustees, was formally presented by a Committee of the local Auxiliary at the last bi-monthly meeting of the Academy, and was unanimously approved, and resolutions of thanks and appreciation ordered sent to the Auxiliary.

Mrs. Lee Sutton, President of the local Auxiliary, and Mrs. J. Allison Hodges, President of the Woman's Auxiliary to the Medical Society of Virginia, presented the offer, and Mrs. N. T. Ennett, immediate past-President of the Richmond Auxiliary, and Mrs. W. F. Drewry, were also present.

It is believed that this arrangement will bring into even closer contact the Academy

and its Auxiliary, and it is also hoped that other Auxiliaries in the State may desire to join in this work, for the new Library Building promises to be a central spot where all of the doctors of the State may meet when in Richmond, and use and enjoy the privileges of the Library and Building.

If any or all of these should desire to aid in any way this undertaking, it would be appreciated, and would bring the profession closer together in social fellowship.

Dr. Jos. L. Miller, of Thomas, W. Va., the donor of many valuable books and relics for the Library, when informed of this intention of the Auxiliary, expressed his great pleasure that the profession of the State could thus be given an opportunity of feeling that it had a part in the benefits the Library would afford.

This Library, containing many most valuable medical works by famous authors of the past, as well as many Incanabula now practically unobtainable, will be a great asset to the medical profession, for it is said that possibly only the Library of Congress can rival it in some special features.

The President of the Auxiliary to the Medical Society of Virginia will later communicate with the other Auxiliaries in the State, and it is hoped that interest and cooperation may be elicited, and the new Library become the center of attraction for the entire profession of the State.

Virginia's Delegates to the Auxiliary of the A. M. A.

The State President has appointed Mrs. Wm. Lett Harris, of Norfolk, and Mrs. Reuben F. Simms, of Richmond, as delegates from the Virginia Auxiliary to the New Orleans meeting of the National Auxiliary, May 9th-13th. Mrs. Southgate Leigh, of Norfolk, one of the National officers, also expects to attend and it is hoped many more of the wives of Virginia doctors will have the pleasure of attending this meeting and enjoying New Orleans hospitality.

National News.

The Louisiana and Mississippi Auxiliaries are naturally occupied with the machinery that will operate to make a success of the May 9th-13th National Convention. Their Publicity Chairman, Mrs. S. M. Blackshear beguiles us with such charming suggestions as this:

"Let us stroll through the Vieux Carré, beloved haunt of artists, down the narrow alleys where trod such personages as Lafayette, Iberville, Bienville, and Lafitte, the pirate. You will see places whose historic legend looms before you like a dream of the glamorous past and finally we will wind up for tea in an old patio garden of exotic tropical beauty. This trip is one of the features sponsored by the Women's Auxiliary during the American Medical Convention in New Orleans, May 9th to 13th."

"The function of a medical auxiliary is to interpret the medical profession to the public. So Mrs. Walter Freeman, of Philadelphia, president-elect of the Auxiliary to the American Medical Association, told the women's auxiliary to the Omaha-Douglas County Medical Society, Tuesday, March 8th, at a luncheon in her honor at the Fontenelle Hotel.

The daughter of a famed 95-year-old surgeon, author and editor, Dr. William Williams Keen, of Philadelphia, Mrs. Freeman is the widow of a physician and the mother of two. One son, Walter Freeman, is professor of neurology at George Washington University, Washington, D. C., and another is doing research work at Harvard.

The speaker was presented by Mrs. C. C. Tomlinson, new president of the Omaha Auxiliary.

As an illustration of the way the Texas State Auxiliary stimulates the quality and quantity of work done in that State, the reports show that early last fall questionnaires were sent to each County Auxiliary to be returned this spring. These questionnaires indicated the desirable and approved activities that might be carried on. You can see that looking forward to the time when that questionnaire was to be answered and returned would make an Auxiliary consider the value and local expediency of possible activities and how best to achieve goals selected. Perhaps this explains why Texas leads in Health Education, why the Student Loan Scholarship Fund grows so vigorously, why the work of organization goes forward so admirably.

The *Hygeia* Chairman of the District of Columbia Medical Society Auxiliary has placed *Hygeia* in one hundred homes in the District. This is an unusually large number of home subscriptions for one Auxiliary to secure. Congratulations. This Auxiliary has a Motor

Corps composed of its members. They furnish automobiles for activities carried on by the Corps. Three days a week they take the welfare workers from the hospitals on their round of duties. On two days a week they carry groups of children to the hospitals for physical therapy.

The Medical Society of San Juan, Colo., testifies that its Auxiliary has been directly responsible for increasing attendance at and interest in the Society's meetings. This is a real service and should be one of the direct results of every Auxiliary in the land.

Truth About Medicine

In addition to the articles enumerated in our letter of February 26th, the following have been accepted:

Connaught Laboratories
- Insulin—Toronto, 40 Units, 10 c.c.
- Insulin—Toronto, 80 Units, 10 c.c.
- Insulin—Toronto, 100 Units, 10 c.c.

Cutter Laboratory
- Diphtheria Toxin Antitoxin Mixture 0.1 L + (Goat)—Cutter.

Lederle Laboratories, Inc.
- Solution Liver Extract Parenteral (Lederle) Refined and Concentrated.

Eli Lilly & Company
- Merthiolate Ophthalmic Ointment 1:5000
- Tincture Merthiolate 1:1000

H. K. Mulford Company
- Pneumococcus Antibody Globulin Type I—Mulford

National Drug Company
- Diphtheria Toxoid, one vial package
- Pollen Antigens—National, one 5 c.c. vial package
- Pollen Antigens—National, four 1 c.c. syringe packages
- Pollen Antigens—National, sixteen 1 c.c. syringe packages
- Schick Test (Peptone Diluent)
- Von Pirquet Test for Tuberculosis

NEW AND NON-OFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Non-official Remedies:

Diphtheria Toxin for Schick Test Diluted Ready for Use—Lilly.—A diphtheria toxin (New and Non-official Remedies, 1931, p. 383), diluted with physiological solution of sodium chloride containing 0.1 per cent gelatin and having a pH of 7.8 to 8.0. It is marketed in packages of one vial containing sufficient for ten tests, and in one vial containing sufficient for 100 tests. Eli Lilly & Co., Indianapolis.

Normal Horse Serum (1:10 Dilution) for the Conjunctival Test.—Normal horse serum (New and Non-official Remedies, 1931, p. 346), 1 part, diluted with physiological solution of sodium chloride, nine parts. Marketed in packages of one vial with dropper outfit. Lederle Laboratories, Inc., Pearl River, N. Y.

Book Announcements

Psyllium Seed: The Latest Laxative. A Scientific Treatise. By DR. J. F. MONTAGUE, Medical Director, Montague Hospital for Intestinal Ailments; Late of University and Bellevue Hospital Medical College, etc. Montague Hospital for Intestinal Ailments. New York City. 1932. Octavo of 170 pages. 20 illustrations. Cloth.

The Technique of the Non-Padded Plaster Cast. By FRITZ SCHNEK, M. D., First Assistant at the Accident Insurance Hospital in Vienna. With a Preface by LORENZ BOHLER, M. D., Director of the Accident Insurance Hospital in Vienna. Authorized English Translation by Douglas D. Toffelmier, M. D., Oakland, California. Member of the Orthopedic Staff of the Mevitt Hospital. Vienna. (Austria) Wilhelm Maudrich. 1932. Octavo of 140 pages. 169 illustrations. Cloth. Price, $5.00, post free.

Papers on Surgery and Other Subjects. By GEORGE TULLY VAUGHAN, M. D., LL. D., F. A. C. S., Professor, Chief of Surgery, Georgetown University; Chief Surgeon Georgetown University Hospital; Consulting Surgeon U. S. Veterans Bureau Diagnostic Centre; former Assistant Surgeon General U. S. Public Health and Marine Hospital Service; Commander M. C., Reserve Force U. S. Navy; Chief Surgeon, U. S. Transport *"Leviathan"* during the World War, etc. W. F. Roberts Company. Washington, D. C. 1932. Octavo of 408-ix pages. Illustrated. Cloth.

Desdemona Hawkins. The White Rat of Hawkins Hall. By ALICE MARY KIMBALL and MARY ALDEN HOPKINS. 1932. Evaporated Milk Association, 203 N. Wabash Avenue, Chicago. Pamphlet of 47 pages. Illustrated. Copies will be sent upon request.

Modern General Anesthesia. A Practical Handbook. By JAMES G. POE, M. D., Lecturer on General Anesthesia in the Medical and Dental Departments of Baylor University; Anesthesiologist of Baylor University Hospital of Dallas, etc. Second Edition, completely revised and enlarged. Philadelphia. F. A. Davis Company. 1932. Octavo of 231 pages. With 12 illustrations and 2 charts. Cloth. Price, $2.50.

Growth and Development of the Child. Part III. **Nutrition.** Report of the Committee on Growth and Development. Kenneth D. Blackfan, M. D., Chairman, White House Conference on Child Health and Protection. The Century Company. New York. 1932. Octavo of 532 pages. Cloth. Price, $4.00.

Obstetric Education. Report of the Subcommittee on Obstetric Teaching and Education. Fred Lyman Adair, M. D., Chairman, White House Conference on Child Health and Protection. The Century Company. New York, 1932. Octavo of 302 pages. Cloth. Price, $3.00.

Nutrition Service in the Field. Report of the Subcommittee on Nutrition. Lucy H. Gillett, Chairman, White House Conference on Child Health and Protection. Octavo of 139 pages. **Child Health Centers: A Survey.** Report of the Sub-committee on Health Centers. J. H. Mason Knox, Jr., Chairman. Lillian Laser Strauss, Vice-Chairman. White House Conference on Child Health and Protection. Octavo of 57 pages. The Century Company, New York. 1932. Bound in one volume. Price, $2.00.

XUM

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PUBLICATION COMMITTEE

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VOLUME 59 MAY, 1932 No. 2

Editorial

An Announcement: Dr. Maxwell E. Lapham.

It is an important announcement to the medical practitioners of this State to say that Dr. Maxwell E. Lapham has been selected as Clinical Instructor in Prenatal and Postnatal work which is to be conducted under the sponsorship of the Medical Society of Virginia. This appointment has just been made and the announcement is made forthwith through this official publication of the Society.

Dr. Lapham, aged 32, graduated in medicine in 1925 at the University of Pennsylvania. He served two years in rotating internship at the Presbyterian Hospital; spent five months in medical practice in Labrador; served as resident obstetrician at University of Pennsylvania Hospital and as instructor in obstetrics at the University of Pennsylvania. Credentials of this sort give strong promise of the adequate preparation of the appointee for this important new work in Virginia—a work that carries the "gospel" of scientific knowledge to the busy workman in the field of obstetrics.

It would appear that the practitioners, availing themselves of this new agency of the Society in post-graduate work, will be highly fortunate in having at their command a man so well qualified and equipped in this field of medicine. It is hoped that this new service in review, instruction and clinical demonstration will be fully utilized by busy practitioners in their endeavor to carry to the women of Virginia a high state of efficiency in obstetrical services.

This announcement and comment should not be brought to conclusion without saying that the successful operation of this new work of Clinical Instruction to the Post-Graduate doctor of Virginia will meet the ardent purposes of a former president of the Medical Society of Virginia, Dr. J. Allison Hodges, who has labored in and out of season in an effort to bring about this new and important work in this State.

Considerations of Calcium Metabolism.

Inorganic salts form an essential element in body composition and maintenance. When the body is "returned to dust" by decay, or by incineration there remains the ash: "The coffins were broken open; the *ashes* were scattered to the four winds" or "even in our *ashes* live their wonted fires."

Physiologists compute the average amount of ash in the body to be about 4.3 to 4.4 per cent of body weight. Soft tissues, like muscle, it is estimated form only about 0.6 to 0.8 per cent, but the bone or skeleton structure, in the adult, comprises about 5/6 or most of the ash in the body. Inorganic salts or ash of the body consist of salts of potassium, sodium, calcium, magnesium, and iron; and also iodin occurring in thyroid tissue. In the liquid system of the body the chief salts are sodium chlorid, sodium carbonate, sodium phosphate, potassium and calcium chlorid or phosphate. These maintain such composition of the body fluids as is needed in osmotic interchanges between channels and tissue cells, in regulation of acid base equili-

brium, and in furnishing an essential part in the composition of living matter.

In the living molecule, in the proteins of the body, in the factor of blood coagulation, in the rhythmical contractions of the heart muscle, in the permeability of the capillary wall and other membranes, in the hemoglobin, in the large and important skeletal frame, and in other ways, the ash effects are to be observed in the support, maintenance, and duration of body-life.

It is quite apparent that diet or food should be adequately supplied through the life of the animal in the matter of carbohydrates, proteins, and fats and that water and vitamins are likewise necessary to the support of the body-strength and resistance against disease. But it is probably true, that as yet, not enough has been brought out in regard to the adequate maintenance of ash-adequate-diets in the young and adult human. If the status of bone disease and especially tooth decay in the human race today is to be taken as an index of this system of the body, where so high a percentage of ash (calcium) is necessary in its structure, and function, then it is quite probable that ash-poor diets prevail too much.

Calcium salts, especially, need emphasis. They play an important part in irritability of muscle and nerve; they furnish a material part in growth and maintenance of the osseous system. Calcium and phosphorus are companions in bone formation. In the blood, normally, there should be about 10 mgms. of calcium and 5 mgms. of phosphorus per 100 c.c. of blood to maintain a physiologic bone growth and function.

The parathyroid gland in an especial way is concerned in calcium metabolism and calcium elimination in the urine and feces is regulated or controlled by the hormone therein generated. A decrease, a normal, or an increased calcium content in the blood is by this gland decidedly influenced. In states of ash-poor-dietary, particularly calcium, wherein a low calcium is found, methods for increasing calcium absorption and for bringing up and sustaining an adequate blood calcium, play an important part in body growth, in bone disease, and in other essential health factors. In such state of low calcium, Victor C. Leonie* has pointed out four methods for raising the blood calcium to normal level and also for preventing loss of calcium through the large intestines. This author emphasizes what is well recognized now by other clinicians: (1) the use of ultra-violet rays or ordinary sunshine; (2) the administration of anti-rachitic vitamin (cod liver oil—irradiated ergosterol and irradiated foods); (3) the use of Collip's parahormone; and (4) the use of such acids as hydrochloric acid, or compounds metabolizing like it, such as ammonium chloride and calcium chloride. It is generally understood now that ultra-violet or sunshine acting on the ergosterol in the skin raises the gastro-intestinal acidity, increases the absorption and retention of calcium and phosphorus. Thus the action of cure in rickets is brought about.

Besides in a review of the subject in an editorial of the *Journal of the American Medical Association*,† the editor points out important considerations of nutrition in pregnancy. In this, one has attention drawn clearly to the importance of the growing fetus in the matter of adequate nutrition of the mother. In pregnancy, the source of the supply of calcium and phosphorus must be the mother's blood and the growing baby must rely upon the vitamin quality of the mother's milk. The role of calcification of the osseous structure of the fetus and new born and growing baby is definitely related to the blood calcium and the endocrine control of this ash elaboration in the body. "Bone, we are further reminded," says the editor, "is not a fixed product but an active ever-changing tissue, the formation of which is regulated by a complexity of interrelated factors normally acting with precise coordination." Thus the practitioner is apprised of the extremely important domain in obstetrics and the newborn of calcium metabolism.

Barker* has recently brought out matters that relate to this subject in dental caries in the rachitic young and in the adult. Attention was drawn to the work, especially of Mellanby, among others, depicting the influence of dietary poor in vitamin D. It seems probable, says the clinician, that the external and internal hypoplasias of the permanent teeth have their origin in defective calcifying process during the first and second years of life. Such faults of dentition may be forestalled by providing at this period a plentiful supply of vitamin D in the food. Secondary caries, it

*Quoted by General Therapeutics, Fantus, 1931, page 141.

†Journal American Medical Association, March 26, 1932, page 1088.

*Barker. Paper read before the Cleveland Dental Society and the Cleveland Academy of Medicine, January 5, 1931.

is felt, may be prevented by energetic use of anti-rachitic diet as before suggested. So the pregnant woman should ingest an abundance of foods rich in vitamin D, such as egg yolk, whole milk, and leafy vegetables. For the safety and development of permanent teeth, children should, especially in the first and second years, receive plenty of vitamin D (cod liver oil and ergosterol), and exposure to sunshine. Throughout young life and adolescence and besides later adult life, whole milk, eggs, green vegetables, orange juice, should have an important place in the diet.

Sunlight in Health and Disease.

Ultra-violet radiation has an accepted place in modern therapy. It has proved to be valuable in the prevention and cure of rickets, in surgical tuberculosis and certain skin diseases. Sunlight must have a place in the well being of the body, in its physiologic action and in its resistance to the inroads of disease. While it is known that animals and human beings have lived in coal mines, in dark enclosures, and covered with dark and forbidding clothing for long periods of time, it is no great stretch of reasoning to hold that such an environment in the absence of sunlight makes for deficiency of physical perfection and bodily strength. In recent times, however, under the influence of this accepted therapeutic use of ultra-violet energy in disease and health, there has been an exaggerated use of the idea by the lay public. This has been observed in the widespread effort at affecting a dark tanning of the body by exposure to sunlight especially on bathing beaches. The overuse of a wholesome measure by faddists and uninformed people to the point of producing harm and injury to the body would seem to make a brief reference to this popular practice on the part of the laity appropriate, especially now the summer season is approaching. Physicians may find a careful consideration of this subject by Coblentz* who discusses ultra-violet radiation, useful for therapeutic purposes, in a recent publication:

1. Untanned moist skin in summer requires an exposure of only about one-half to two-thirds as long as in winter (skin dry) in order to produce a minimum perceptible erythema; mid-day mid-latitude, sea level ultra-violet in summer sunlight, having an intensity of from 80 to 90 microwatts per square centimeter produced a minimum perceptible erythema in from twenty to forty-five minutes.

2. Heliotherapists obtain best results by exposing their patients in the forenoon or afternoon in summer and at noon in winter.

3. Effective healing of rickets, especially in children, as distinguished from rats and chicks, is gotten under solarium windows of a high transparency to short wave length ultra-violet radiation; exposures covering several hours each day and continuing for two months or more.

4. Human infants, partly dressed, leaving the head, neck and a greater part of the extremities free for exposure, exposing alternately front and back, in one hour intervals for twelve hours daily, to an average illumination intensity of 75 foot candles of tungsten filament radiations, produced by a 500 watt Mazda CX lamp, in an aluminum reflector, situated at a distance of 5½ feet above the level of the bed, show healing of rickets. This healing begins in from one and one-half to two weeks after starting the treatment, and complete healing occurs in nine to eleven and one-half weeks.

5. The exact influence of radiant energy on the health of healthy persons is not established. It is estimated as a result of studies on radiation of rickets, that a daily exposure to an intensity of from one-third to one-tenth of a curative dose should be sufficient to prevent; it is perhaps good practice to use 25 per cent of the minimum perceptible erythemal dose in planning ultra-violet ray installation for daily use.

From the foregoing abstracts, one may find some indications of the trend in this means of therapy. A reading of the author's full article will throw added light on more abstruse phases of dosage in artificial light therapy.

*J. A. M. A., March 26, 1932, page 1052.

You will find it less easy to uproot faults than to gain virtues. Do not think of your faults; still less of others' faults. In every person who comes near you, look for what is good and strong; honor that; rejoice in it; and as you can, try to imitate it, and your faults will drop off like dead leaves when their time comes—*John Ruskin.*

Department of Clinical Education
OF THE MEDICAL SOCIETY OF VIRGINIA

Speakers for Educational Meetings.

In response to the request of the officers and chairmen of program committees of many medical societies, members of the faculties of the Medical College of Virginia and the University of Virginia, sixty-one in number, have volunteered their services as clinicians and instructors for educational meetings. Each speaker is available for engagements which involve reasonable travel. Invitations for them to appear on programs should be made as far in advance as possible, either directly or through the officers of the Department, Dr. J. C. Flippin, Chairman, and Mr. George W. Entsler, Executive Secretary, at University, Virginia.

The speakers and their subjects are as follows:

Medicine

DR. T. N. BARNETT:
1. Disease of Gastro-Intestinal Tract, especially Peptic Ulcer or Colon Condition.

DR. S D. BLACKFORD:
1. Tularemia.
2. Spontaneous Subarachnoid Hemorrhage.
3. Prognosis and Treatment of Lobar Pneumonia.

DR. W. B. BLANTON: (No subject given.)

DR. W. E. BRAY:
1. Clinical Laboratory Methods for Office Practice.
2. Tests for Pregnancy.
3. Simple Laboratory Aids in Nephritis.

DR. W. E. BROWN and DR. F. B. STAFFORD:
1. Demonstration of the Proper Methods of Chest Examination.
2. Diagnosis of Pulmonary Tuberculosis
3. Differential Diagnosis of Chronic Pulmonary Diseases, illustrated with lantern slides.
4. General Treatment of Pulmonary Tuberculosis.
5. Special Treatments of Pulmonary Tuberculosis (surgical and otherwise) illustrated with lantern slides.

DR. J. B. BULLARD:
1. Allergy.

DR. D. C. CHAPMAN:
1. Heart Disease.
2. Clinical Significance of Jaundice.
3. Vascular Disease of Extremities.

DR. DEAN COLE:
1. Some Phase of Chest Disease.

DR. DEWEY DAVIS:
1. Achylia Gastrica.
2. Peptic Ulcer.
3. Gastro-Intestinal Neurosis.
4. Subacute Bacterial Endocarditis.

DR. A. D. HAIT:
1. Etiology of Aortic Regurgitation.
2. Hypertension: Discussion of Management.
3. Digitalis in Treatment of Heart Disease.

DR. W. H. HIGGINS:
1. Hypertension.
2. Peptic Ulcer.
3. Thyroid Diseases.

DR. J. M. HUTCHESON:
1. Cardiac Disease.
2. Cardio-Vascular Disease.

DR. H R. MASTERS:
1. Encephalitis.

DR. H. B. MULHOLLAND:
1. Diabetes Mellitus.
2. Recent Advances in Diseases of the Blood.
3. Use of Diet in Disease.

DR. KINLOCH NELSON:
1. Heart Disease.
2. Pulmonary Tuberculosis.

DR. R. A. NICHOLS, JR.:
1. Trichomonas Vaginalis.

DR. W. B. PORTER:
1. Vascular Apparatus
2. Renal Disease.
3. Hematology.

DR. F. W. SHAW:
1. Fungus Diseases: Etiology of the Disease from which the Organism was Isolated.

DR. W. A. SHEPHERD:
1. Clinical Laboratory Diagnosis, Bacteriology, Histology and Pathology.

DR. D. C. SMITH:
1. The Diagnosis of Syphilis.
2. The Modern Treatment of Syphilis.
3. The Classification of Skin Diseases.

DR. J. H. SMITH: (No subject given.)

DR. F. B. STAFFORD: (See Dr. W. E. Brown, above.)

DR. O. SWINEFORD, JR.:
1. Allergy
2. Blood Diseases.

DR. J. E. WOOD, JR.:
1. Cardiac Arrhythmias and Their Treatment.
2. Treatment of Congestive Heart Failure.
3. Management of High Blood Pressure.
4. Treatment of Angina Pectoris.
5. Management of Acute Nephritis.

Neurology and Psychiatry

DR. FINLEY GAYLE:
1. Crime from the Standpoint of a Psychiatrist.

DR. ASA SHIELD:
1. Neurological Disorders.

DR D. C. WILSON:
1. The Early Diagnosis of Mental Disease.
2. Methods of Distinguishing Hysterical from Organic Disorders.
3. An Adequate But Simple Method of Neurological Examination for Office Practice.
4. A Review of the Commoner Neurological Conditions.
5. A Review of Present Day Attitudes in Psychiatry.

Obstetrics

DR. GREER BAUGHMAN:
1. Prenatal Care.

DR. J. M. NOKES:
1. Leucorrhea.
2. Hemorrhage in Obstetrics.
3. Sterility and Contraception.

DR. H H. WARE, JR.:
1. Obstetrics.

DR. T. J. WILLIAMS:
1. Vaginitis.
2. Backache in Gynecology.
3. Toxemias of Pregnancy.

Otolaryngology and Ophthalmology

DR. E. W. BURTON:
1. Squint in Childhood.
2. Intra-Ocular Foreign Bodies.

DR. H. S. HEDGES:
1. Early Diagnosis of Glaucoma.
2. Care of School Children's Eyes.

DR. C. M. MILLER:
1. Ophthalmology and Otolaryngology, particularly Conditions Bearing on Relation of Sinuses to General Diseases and Diseases of Eye and Orbit.

DR. C. TUNSTALL:
1. Diagnosis and Treatment of Mastoiditis.

DR. F. D. WOODWARD:
1. Foreign Bodies in Air and Food Passages.
2. The Present Status of Sinusitis.
3. Deafness.

Pediatrics

DR. ST. GEORGE GRINNAN:
1. Respiratory Infections.
2. Summer Diarrhoea.
3. The Pathology of Vitamin Deficiencies.

DR. T. D. JONES:
1. Infant Feeding.
2. Summer Diarrhoea.
3. Infantile Paralysis.

DR. W. A. McGEE:
1. Early Diagnosis and Treatment of Pertussis.
2. Rectal Ether Treatment of Pertussis.
3. Value of Isolation of Bordet-Gengou Bacillus in Making Early Diagnosis of Pertussis.
4. Acute Epidemic Tracheitis.
5. Pyuria in Infancy and Childhood.
6. Value of Schilling Differential Blood Count in Diseases of Infancy and Childhood.

DR. L T. ROYSTER:
1. Acute Gastro-Intestinal Disturbances in Young Children.
2. Infant Feeding.
3. Acute Nephritis.

DR. HENRY STERN:
1. Infant Feeding.
2. Infectious Diseases.
3 Anemias in Childhood.

DR. J. B. STONE:
1. Pediatrics.

DR. W. W. WADDELL:
1. Childhood Tuberculosis.

Public Health

DR. K. F MAXCY:
1. Diphtheria Immunization.
2. Scarlet Fever: Present Status of Serum Treatment and Immunization.
3. Typhus and Rocky Mountain Spotted Fever in Virginia: Diagnosis.

DR. F. J. WAMPLER:
1. Relation of Diet to Health.
2. Medical Conditions in India, with moving picture (20-minute reel).

Surgery

DR. I. A. BIGGER:
1. Burns.
2. Infection of Hands and Forearm.
3. Diagnosis and Treatment of Lung Abscess.
4. Intestinal Obstruction.

DR. C. C. COLEMAN:
1. Head Injuries.
2. Brain Tumors.
3. Spinal Cord Tumors and Injuries.
4. Inflammatory Diseases of the Brain and Central Nervous System.

DR. E. C. DRASH:
1. Surgical Treatment of Tuberculosis.
2. Treatment of Empyema.

DR. W. H. GOODWIN:
1. Problems of Pyogenic Osteomyelitis.
2. Lesions of the Mammary Gland.
3. Pathological Processes of the Cervix Uteri.

DR. W. T. GRAHAM:
1. Fractures.
2. Congenital Dislocations of the Hip.
3. Anterior Poliomyelitis.
4. Tuberculosis of the Bones and Joints.

DR. F. S. JOHNS:
1. Factors that Influence the Mortality in Acute Abdomen.

DR. E. P. LEHMAN:
1. Surgery of the Sympathetic.
2. Surgery of the Thyroid.
3. Vascular Diseases of Extremities.

DR. H. PAGE MAUCK:
1. Orthopedic Surgery.
2. Industrial Surgery.

DR. S. M. MICHAUX: (No subject given.)

DR. C. B. MORTON:
1. Gastric and Duodenal Ulcer—Principles of Treatment.
2. Chronic Duodenal Obstruction and Certain Other Causes of Gastric Stasis.
3. Hyperthyroidism.
4. Some Principles of Minor Surgery.

DR. C. R. ROBINS:
1. Any gynecological subject.

DR. E. H. TERRELL:
1. Hemorrhoids.
2. Ano-Rectal Fistulae, and Infections.
3. Etiology and Pathology of the Most Frequent Ano-Rectal Disorders.

DR CARRINGTON WILLIAMS:
1. Surgical Aspects of Gastro-Intestinal Diseases.

Urology

DR. R. C. BRYAN:
1. Genito-Urinary Tract.

DR. J. H. NEFF:
1. Chronic Pyuria in Infants and Children.
2. Carcinoma of Prostate.
3. Mimicry of Cystitis.

X-Ray

DR. V. W. ARCHER:
1. X-Ray Diagnosis of Malignant Disease.

Proceedings of Societies

Russell County Medical Society.

The annual election of officers was held during the called meeting in March, 1932, at which time the following were elected for the ensuing year: Dr. T. G. Smith, Lebanon, R. D., President, and Dr. W. C. Elliott, Lebanon, Secretary-Treasurer.

Dr. S. C. Couch, the retiring secretary, read the proposition offered by the Board of Health concerning the Toxin-Antitoxin Immunization. It was decided, after much discussion, that since the Board of Health had recently completed a series of Toxin-Antitoxin clinics over the entire County, it would not be profitable to hold pay clinics at this time.

It was decided to hold three meetings annually; the time and program for these meetings to be arranged by the president and secretary.

W. C. Elliott, *Secretary.*

The Northampton County Medical Society

Met at the Eastville Inn, Eastville, Va., April 7th, for their annual banquet.

Dr. F. D. Wilson, of Norfolk, Va., and Dr. B. B. Bagby, of Richmond, Va., were guest speakers. Together they outlined the suggested health program of the preschool and the early school child.

Facts were brought out to show that 25 per cent of children starting to school were un t for the work because of physical defects. A large percentage of repeaters in grades and failures in grades are due to physical handicaps which should be corrected. The cost to the State is reflected to the taxpayer.

The State Department of Child Hygiene suggests to parents that they have their family doctor examine children regularly so that defects may be corrected and certain diseases may be prevented. The cost of the examination will be much less than the loss due to sickness and failures. The doctors present agreed that they were glad to do the examinations, even to do so free where the parents were unable to pay the small amount usually charged.

Dr. H. L. Denoon, Nassawadox, is president of this Society.

W. C. Henderson, *Secretary.*

Roanoke Academy of Medicine.

Our second hospital meeting for the year was held at the Lewis-Gale Hospital, April 4, 1932 at 8:30 P. M. The program was in charge of the Hospital Staff, who presented the following program:

Schilling Count—Dr. K. D. Graves.
Coronary Disease in Diabetes: Case Report—Dr. C. D. Nofsinger.
X-Ray Therapy—Dr. J. T. McKinney.
Hemarthrosis of the Knee Joint—Dr. M. A. Johnson.
Trans-Urethral Resection of the Prostate—Dr. S. Beverly Cary.

The program was followed by an informal social hour.

Dr. William C. Stephenson, Jr., was elected to membership in the Academy.

The next hospital meeting will be held at the Roanoke Hospital on Monday, April 18th, at 8:30 P. M. C. H. Peterson, *Secretary.*

Norfolk's All-Day Clinic.

The All-Day Post-Graduate Clinic by the Norfolk County Medical Society on March 30th, was a great success. This was participated in by about thirty members of the local society and was attended by about sixty physicians from out of town in addition to a large number of local doctors. One hundred and eight of these attended the luncheon at Norfolk Protestant Hospital, following the morning clinics there. The afternoon clinics were held at St. Vincent's Hospital and these were followed by supper at the Norfolk Country Club at 6 o'clock. There were one hundred and thirty-six present for this occasion. At 8:00 P. M., Dr. D. L. Borden, professor of surgery at George Washington University School of Medicine, Washington, D. C., gave a talk on "Some Unusual Intra-Abdominal Lesions," which was illustrated by moving pictures. This meeting had an excellent attendance.

The papers, illustrations and other demonstrations were very instructive and those present seemed to feel that the Clinic was a great success and well repaid them for their efforts in attending. The committee arranging the clinics was composed of Dr. Julian L. Rawls, chairman, and Drs. A. Brownley Hodges and Robert DuVal Jones, Jr.

News Notes

Richmond Meeting, Medical Society of Virginia.

The first week in November has been set for the annual meeting of the State Medical Society.

Dr. R. Finley Gayle, Jr., President of the Richmond Academy of Medicine, announces the appointment of the various heads of committees as follows:

General Chairman—Doctor Powell Williams
Vice-chairman and Secretary—Doctor D. C. Ashton
Publicity—Doctor W. Randolph Graham
Golf—Doctor Thomas W. Murrell
Finance—Doctor Emanuel Wallerstein
Entertainment—Doctor Asa Shield
Scientific Exhibits—Doctor W. Ambrose McGee
Commercial Exhibits—Doctor C M. Caravati
Hotels and Meeting Halls—Doctor Hudnall Ware
Ladies—Mrs. E. L. Sutton
Automobiles and Reception—Doctor James H. Royster

Lay your plans now to attend this convocation which bids fair to be one of our greatest.

Watch your State journal as well as local and State newspapers for more detailed announcements.

Change in Date of Meeting.

Because May 21st conflicts with the meetings of other important societies, the Virginia Society of Oto-Laryngology and Ophthalmology announces that it has changed its date of meeting from the one previously given *to May the 14th*. The place of meeting will be the Cavalier Hotel, Virginia Beach, as previously stated. Dr. Clarence Porter Jones, Newport News, is president, and Dr. H. Grant Preston, Harrisonburg, secretary-treasurer.

The New Orleans Meeting of the A. M. A.

The American Medical Association is to meet in New Orleans, May 9th-13th, for the fifth time in its history. Not only does this meeting promise much of interest in a scientific way, but also socially. New Orleans is perhaps one of the most fascinating and interesting cities in our country and anyone should feel well repaid for visiting it under such auspicious circumstances. A large number of reservations seem to indicate a record attendance. Railroad tickets may be secured on the certificate plan for a one and a half fare for the round trip. These tickets may be bought from May 5th to 11th, inclusive.

Dr. E. Starr Judd, Rochester, Minn., is this year's president and Dr. E. H. Cary, Dallas, Texas, president-elect. Virginia's representatives in the House of Delegates will be Drs. Southgate Leigh and E. C. S. Taliaferro, of Norfolk, and Dr. Warren F. Draper, Richmond, alternate for Dr. J. W. Preston.

American Medical Golfers Play in New Orleans, May 9th.

The American Medical Golfing Association will hold its Eighteenth Annual Tournament in New Orleans on Monday, May 9, 1932. The thirty-six hole match will be played over the beautiful and interesting New Orleans Country Club course, followed in the evening by the golfers' banquet and distribution of prizes. Approximately fifty trophies and prizes will be distributed to winners in the various events.

The membership of the A. M. G. A. now totals 850 physicians, representing every state in the union. Any male fellow of the American Medical Association in good standing is eligible to membership in the Golfing Association. Applications may be procured by writing Bill Burns, Executive Secretary, 4421 Woodward Avenue, Detroit, Mich.

Mother's Day, 1932.

Mother's Day, to be celebrated this year on Sunday, May 8th, will be devoted not only to filiat attentions through letters, visits, candy, and flowers, but also to an intensive nation-wide campaign to reduce the excessively high death rate of mothers in childbirth. Authorities maintain that of the 16,000 mothers who die annually from this cause 10,000 might be saved through adequate maternity care. The Maternity Center Association, with its headquarters at 1 East 57th Stret, New York City, reports that plans for the campaign are taking concrete form among women's clubs, church and civic organizations, health departments, medical societies, and nursing groups. It is reported that in a similar campaign last year as many men as women became interested, and this year special efforts will be made to awaken prospective fathers to the fact that to have a well baby and a healthy mother, more is required than simply to "let nature take its course." The Maternity Center Association

states that it will be glad to help local organizations everywhere to improve community conditions by supplying, free of charge, material for speeches, programs for clubs and church services, and other campaign aids.

Tri-State Hospital Conference.

The Tri-State Hospital Conference, comprising the hospital associations of Virginia, North Carolnia and South Carolina, will be in annual session at the Jefferson Hotel, Richmond, Va., May 17th-19th.

The session will open with a public meeting on Tuesday night, May 17th, at 8 o'clock, addressed by distinguished speakers. The next day there will be a technical program in the morning and in the afternoon, followed by a banquet and dance that night. The banquet is scheduled for 7:00 P. M. On Thursday from 9:00 to 11:00 there will be a general session followed by separate meetings for business purposes on the part of the three hospital associations making up the conference.

With papers limited to fifteen minutes and discussions to five minutes each it will be possible to cover a wide range of topics during the course of the conference. Each of the three states directly concerned will contribute speakers, and others from distant states will also participate.

Hospital superintendents, members of the nursing and medical staffs, and the boards of trustees, as well as interested members of the general public, are invited to attend the conference. Approximately five hundred delegates are expected to register.

The committee on arrangements is composed of Dr. W. T. Sanger, Mr. Haskins Coleman, secretary of the Virginia Hospital Associaton, and Dr. John Bell Williams, all of Richmond; Dr. R. H. Fuller, South Boston, Va., and the following, who are presidents of their respective State Hospital Associations; Dr. Knowlton T. Redfield, Roanoke, Va.; Dr. Harold Glascock, Raleigh, N. C., and Mr. F. O. Bates, Charleston, S. C.

Clinic Tour Prices Reduced.

Recent drastic reductions in steamship rates will make even more attractive the already low prices of our Cooperative Clinic Tours this year. The prices allowing Tourist Class on the ocean have been reduced by $47.50 and those providing First Class on the ocean have been reduced by $130!

Unquestionably these rates—especially those for First Class—are too good to last. It is our opinion that it will be impossible, with the high grade of service maintained by the North German Lloyd, especially on the *Europa* and the *Bremen*.—the two ships to be used—to continue on the basis of the present prices and there are already rumors of a revision upward in the near future.

In the meantime, however, our tours may be bought at the current bargain rates. The wise ones know that these days of the great "repression" constitute an unprecedented opportunity to travel at minimum cost. Collections are bad anyhow. Why not take advantage of the present situation and go with us this summer? There are three of these tours. One sails from New York on June 7th and the other two on July 19th. Work up a congenial party at once.

Inquiries sent the office of the VIRGINIA MEDICAL MONTHLY will have prompt attention.

Medical College of Virginia News.

Plans are being made for the post-graduate clinic for Negro physicians to be held at St. Philip Hospital during the early summer. The special clinic will begin June 20th, and will continue for a period of two weeks. The marked success of the course offered last year leads us to believe that the classes should be continued this year. All of the courses will be given by the members of the faculty of the college and the course will vary sufficiently from last year's course to justify the same doctors in registering.

Dr. Harry Bear, dean of the school of dentistry, Dr. A. O. James, Dr. M. G. Swenson, Dr. J. C. Forbes, Dr. P. L. Chevalier and Dr. S. F. Bradel attended the annual meeting of the American Association of Dental Schools at Ohio State University, Columbus, the latter part of March.

Dr. Sidney S. Negus, professor of chemistry, and Mr. Robert F. McCrackan, associate professor of Chemistry, attended the spring meeting of the American Chemical Society in New Orleans the last week in March.

Distinguished visitors at the college during the last few weeks were: Dr. John R. Minehart, dean of the school of pharmacy, Temple University, Philadelphia; Dr. Walter M. Simp-

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son, director of the diagnostic laboratory, Miami Valley Hospital, Dayton, Ohio; Dr. Frank L. Babbott, Jr., dean of the school of medicine, Long Island College of Medicine, Brooklyn, New York, and Dr. Edgar D. Congdon, who has recently returned from work for the Rockefeller Foundation in Peking and Bangkok.

Final plans are being made for the Tri-State Hospital conference, which will meet at the Jefferson Hotel, Richmond, Va., May 17, 18 and 19, 1932. The committee working on this program includes F. O. Bates, president of the South Carolina Hospital Association; Dr. Knowlton T. Redfield, president of the Virginia Hospital Association; Dr. Harold Glascock, president of the North Carolina Hospital Association, and Dr. W. T. Sanger, president of the Medical College of Virginia. Others on the committee are Dr. John Bell Williams, of Richmond; Dr. R. H. Fuller, of South Boston, and Mr. Haskins Coleman, of Richmond.

The senior pharmacy students of the college, accompanied by Dr. Rolland J. Main, visited several large pharmaceutical houses in Philadelphia during the early part of April. This is a yearly visit by the members of each of the senior classes.

Both the social service and the dental departments of the college have had a busy month during March. In the out-patient department more than seven hundred cases were investigated and handled, and in the dental infirmary there were two thousand patient visits made during the month, which was the busiest since this service was first inaugurated.

The college expects to graduate one hundred and sixty students from its several schools this year. The commencement sermon will be given by Dr. Frederick W. Burnham, pastor of the Seventh Street Christian Church, at 8:00 o'clock on the evening of May 29th. On the preceding night the dramatic club will present a play—*Marrying Anne.* On Monday, May 30th, the alumni will have their various functions, the day to be concluded with a dinner at the Commonwealth Club with Dr. James M. Northington, president of the alumni association, presiding. The diplomas will be presented to the graduating class at public exercises in the Mosque Theatre at 3:00 o'clock on the afternoon of May 31st. Dr. William D. Cutter, Secretary of the American Medical Association Council on Medical Education and Hospitals will be the commencement speaker.

Mr. J. R. McCauley, secretary of the College, represented the institution at the alumni dinner held during the recent meeting of the North Carolina State Medical Society.

News Notes from University of Virginia, Department of Medicine.

On March 26th, Dr. H. E. Jordan attended the annual meeting of the Executive Committee of the Commission on Standardization of Biological Stains at the Medical Center, Columbia University.

At the meeting of the University of Virginia Medical Society on March 28th, Dr. W. H. Pearson, of Norfolk, Va., spoke on the subject of Orthodontia.

At the meetings of the American Association of Anatomists in New York City from March 24th to 26th, Dr. H. E. Jordan read a paper on The Lymphocytes of the Urodele, Proteus angiueneus; Dr. C. C. Speidel on Nerve Regeneration and Readjustment as Revealed by Prolonged Observation of Individual Fibers in Living Frog Tadpoles; Dr. J. E. Kindred on A Study of the Tinctorial Reactions of Hemoglobiniferous Cells, Russell Bodies, Plasma Cells, and Lymphoctyes of the Albino Rat by a New Method of Selective Staining.

On April 7th, Dr. C. C. Speidel spoke before the University of North Carolina Chapter of Sigma Xi on Growth and Activities of Living Nerves.

On April 8th, Dr. Kenneth Maxcy attended the meeting of the American Epidemiological Society in New York City.

Dr. Russell L. Cecil, Assistant Professor of Medicine in the Cornell University Medical College, gave the address on the occasion of the annual initiation to Alpha Omega Alpha on April 12th. Dr. Cecil spoke on The Treatment of Pneumonia.

Dr. A. N. Richards, professor of pharmacology at the University of Pennsylvania, visited the Medical School on April 13th.

Dr. and Mrs. Warren H. Lewis, of the department of embryology of the Carnegie Institution of Washington, D. C., spent the day of April 14th at the Medical School.

News Notes from the Duke University School of Medicine and Duke Hospital.

On April 8th, Dr. Ralph Pemberton, Associate Professor of Medicine, University of Pennsylvania, Philadelphia, and Chairman of the American Committee for the Control of Rheumatism, gave a clinic on Arthritis at the Duke Hospital.

On April 15th, Dr. Warren H. Lewis, of the department of embryology, Carnegie Institution of Washington, gave a clinic on Cancer at the Duke Hospital.

Dallas Southern Clinical Society.

Four years ago the local medical society of Dallas, Texas, started what is known as the Dallas Southern Clinical Society. It is organized along the lines of the International Post-Graduate Assembly. A week is devoted to lectures and to clinics. At noon each day there are luncheon round-table discussions. The clinics and lectures are held by men of prominence selected from the United States and sometimes from Canada.

The Society has grown into considerable influence and its registration includes men not only from Texas but from various regions of the South, a few from California and from Mexico.

Each of the honored guests gives at least one dry clinic and one lecture. In addition, he is a target for questions at the round-table discussions and luncheons.

The meeting this year was held in Dallas from March 28th to April 2nd, inclusive, and was well attended and very stimulating. The honored guests included Dr. J. Shelton Horsley, of Richmond. Dr. Horsley attended the meeting for three days, during which time he delivered two lectures, conducted two dry clinics, and led three round-table discussions.

The other honored guests were Dr. Thomas R. Brown of Baltimore, Dr. Frank H. Lahey, of Boston, Dr. Karl A. Menninger, of Topeka, Dr. Herman L. Kretschmer, of Philadelphia, Dr. Samuel A. Leving, of Boston, Dr. Merrill C. Sosman, of Boston, Dr. W. McKim Marriott, of St. Louis, Dr. Lee Wallace Dean, of St. Louis, Dr. Udo J. Wile, of Ann Arbor, Dr. William O'Neill Sherman, of Pittsburgh, Dr. Paul Titus, of Pittsburgh, Dr. Carl A. Hedblom, of Chicago, Dr. William L. Benedict, of Rochester, Minn., Dr. Edward R. Richardson, of Baltimore, Dr. John A. Kolmer, of Philadelphia, Dr. Joseph C. Beck, of Chicago, Dr. Albert H. Howe, of Oakland, Calif., and Dr. Dudley A. Smith, of San Francisco.

Dr. E. R. Moorman,

Of the class of '30, Medical College of Virginia, is now located at Kilmarnock, Va., where he is engaged in general practice. Dr. Moorman interned for the year after graduation at the City Memorial Hospital, Winston-Salem, N. C., following which he was resident physician at the Southside Community Hospital, Farmville, Va., until he located at Kilmarnock.

Annual Report of the National Society for the Prevention of Blindness.

One of the specific instances of progress, given in the Annual Report of the National Society for the Prevention of Blindness, is the further reduction of blindness from ophthalmia neonatorum, commonly known as "babies' sore eyes." In 1931, only 7.5 per cent of all new admissions to schools for blind had lost their sight from this cause as compared to 28 per cent in 1907. The Society is continuing its cooperation with the National Safety Council and the American Society of Safety Engineers for the prevention of industrial eye accidents. Studies indicate that there is a great need for more extended activities to reduce the loss of eyesight from firecrackers, air guns, scissors, etc. An unusually important project, undertaken during the past year in cooperation with the department of education of Columbia University, is a study to determine what effect reading actually has on the eyes.

The Society has continued the promotion of sight-saving classes for children with the result that during 1931, twenty-two additional classes were organized, bringing the total number in the United States to 398, located in 114 cities in twenty-three states. Sixty-eight teachers for sight-saving classes were enrolled in courses at several colleges. Also in the inter-

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est of the eyesight of school children, the Society has participated in the revision of the Code for Lighting School Buildings. Activities in connection with the White House Conference on Child Health and Protection have been continued during the past year, and several local conferences have been held. During 1931, the Society gave 103 demonstrations of vision testing in forty-two cities, in nine states, before 6,789 school and public health nurses, teachers, doctors and social workers. In one state alone more than 8,000 preschool children had their vision tested.

"Medicine in Virginia in the 18th Century."

That "A prophet is not without honor, save in his own country" may well be applied to this most excellent history of medicine in our own State, as we are advised that the majority of orders for this volume have come from out of this State.

The two volumes on Medicine in Virginia which have already been published should have a place in every doctor's library because of their value and interest. As there is only a limited number to the edition named above, Virginia doctors who contemplate securing copies should place their orders at once, which may be done through the offices of this journal.

The material in these volumes has been compiled by Dr. Wyndham B. Blanton, as chairman of the Committee of the Medical Society of Virginia on History of Medicine in Virginia. It will be a matter of pride to those interested in this work to read the splendid notice given this history in the March 26th issue of the *Journal of the American Medical Association.*

Order your copy *NOW.*

Deaths of Physicians Published in 1931.

During 1931 there were 2,952 deaths of physicians in the United States as compared with 2,943 during 1930, according to the *Journal of the A. M. A.* The average age at death of those classified was 63.8 as compared with 63.7 for 1930. There were 139 physicians who died as a result of accidents as compared with 130 in the previous year. Automobile accidents accounted for seventy-one, five more than in 1930. Sixty-four physicians committed suicide in 1931, two less than in 1930. There were nine homicides caused by shooting and one by stabbing.

Heart disease was again the leading cause of death, with 1,065 deaths compared with 1,059 for 1930. Cerebral hemorrhage was the second most frequent cause reported, while pneumonia was the third most frequent cause. Fourth on the list was arteriosclerosis.

Hospital Lien Bill—A New Law.

At the recent session of the Virginia Legislature, a bill was presented "To create a lien in favor of hospitals for its reasonable charges for caring for persons injured in accidents, the giving of notice of such lien, the effect thereof and to provide for the adjudication of the claims made by hospitals against persons injured in accidents."

This Bill was sponsored by the Virginia Hospital Association and the Committee on Legislation and Public Health of the Medical Society of Virginia. After persistent effort on the part of representatives of these two bodies, the law was enacted by the General Assembly of Virginia and approved by the Governor on March 24, 1932.

Hospital authorities throughout the State should acquaint themselves with this law and what it may mean to them.

Dr. Ward C. Curtis,

Warrenton, Va., had the misfortune to lose most of his clothing, instruments, books and important papers in a fire which recently destroyed his sister's home, where he was keeping these things for a short time. Dr. Curtis is a graduate of the Medical College of Virginia in the class of '20, and was for a time connected with the medical staff of the Central State Hospital at Petersburg, Va.

Child Accidents Cause Blindness.

Almost one-tenth of all blindness in institutions is due to accidents in childhood, according to the National Society for the Prevention of Blindness. The society has undertaken a study of the types and causes of eye accidents in childhood and is also examining city ordinances concerning such outstanding causes as firecrackers, air rifles, and bean shooters. The facts will then be placed before the public and the State legislatures.

Dr. D. Hunter Marrow,

After spending the winter at Daytona Beach, Fla., returned to his home in Boydton, Va., about the middle of April.

"The Next Step Toward Better Maternity Care."

This is the subject for discussion at a luncheon to be given on May the 5th in New York City, by Mrs. E. Marshall Field (vice-president) and the Board of Directors of the Maternity Center Association. The speakers on this occasion will be Dr. Thomas Parran, Jr., Commissioner of Health, State of New York; Dr. John A. Hartwell, President, New York Academy of Medicine; and Dr. Charles Gordon Heyd, President-elect, New York State Medical Society.

Dr. Howard R. Masters,

Richmond, Va., was elected president of the local chapter of the Randolph-Macon College Alumni Association, at the organization meeting held in this city, April 14th.

The Medical Society of the State of North Carolina

Held a record breaking meeting in Winston-Salem, the middle of April, under the presidency of Dr. M. L. Stevens, of Asheville. The registration mark neared 750. On the last night, Dr. John B. Wright, Raleigh, was installed as president for the coming year. Other officers are: Dr. I. H. Manning, Chapel Hill, president-elect; Dr. J. R. McCracken, Waynesville, and Dr. W. G. Suiter, Weldon, vice-presidents; and Dr. L. B. McBrayer, Southern Pines, re-elected, secretary-treasurer. It was decided to hold the 1933 meeting in Raleigh.

Dr. Staige D. Blackford,

University, Va., sailed about the middle of April, on the S. S. *Vulcania*, for a Mediterranean cruise.

Bank Directors.

Drs. E. G. Brumback and Loring Hammer, of Luray, Va., were elected directors of the First National Bank of that place, at a meeting held on March 31st.

Dr. J. Fulmer Bright,

For nearly eight years mayor of Richmond, Va., was renominated for this same office in the Democratic Primary in Richmond, early in April.

Merck to Have New Research Laboratory Building.

Ground was recently broken for the erection of a research laboratory building at the works of Merck & Co., Inc., at Rahway, N. J. The project has been under consideration for some time. George W. Merck, president of the Company, brought it to the attention of the stockholders a year ago. The directors have authorized proceeding with the work at this time, moved by the consideration that it will provide increased employment and that the facilities are urgently needed. The research activities of the Company are at present being carried on in various parts of the large Merck plant—in many cases in make-shift quarters.

The building will be a Colonial type, brick structure, with a central section 40 ft. by 80 ft., of two stories and basement. On each end of this central section will be two one-story wings, 50 ft. by 100 ft. The wings will be connected with the central section by two one-story units, 10 ft. by 38 ft.

The south and north wings will be devoted to carrying on special types of research work, while the central section will contain on the first floor the offices and private laboratories of the research directors and several other laboratory rooms. Here also will be located the library, which will be an outstanding feature of the building. The arrangement of the library will provide for work tables and complete files of technical literature from all over the world. The work of the librarian and abstractors will be carried on in adjacent locations. The Patent Department offices will also be located on the second floor. The basement will also be fully utilized.

Merck & Co., Inc.'s, decision to carry out such ambitious plan at this time adds another to the growing list of American chemical companies who have determined not to allow the period of depression to diminish their activities in research and technical endeavor.

Dr. Pauline Williams to Preside at National Convention.

Alpha Epsilon Iota Fraternity of medical women will hold its biennial convention at Portland, Ore., June 10th, 11th, 12th. The entertaining chapter, Xi, is located at the University of Oregon. Dr. Pauline Williams, of Richmond, national president, will preside at the meeting. She will be accompanied to Portland by her secretary, Miss Mary Elizabeth Johnston. The organization embraces a membership of 1,500 women physicians and women medical students; the chapters being established in twenty-two class A medical schools throughout the country.

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Dr. Williams, who is a member of the class of '24, Medical College of Virginia, was among those elected to fellowship in the American College of Physicians on April 6th, during the annual convention of that organization in San Francisco. Her certificate was presented to her *in absentia*.

Changes for Medical Reserve Officers.

Major Robert R. Hoskins, Med-Res., Mathews, Va., is relieved from assignment to the 80th Division and is assigned to the 41st General Hospital, in capacity of Assistant Chief of Medical Service.

First Lieutenant Mallory S. Andrews, Med-Res., Norfolk, Va., has been assigned to the 41st General Hospital, in capacity of Surgical Ward Officer.

Dr. Frederick P. Barrow, Portsmouth, Va., has been promoted to First Lieutenant, Medical Corps, 111th Field Artillery.

Again Honored.

The British Medical Journal, London, contains the anouncement that at a meeting of the Council of the Royal College of Surgeons of England, Lord Moynihan, President, in the chair, The Right Hon. Lord Dawson of Penn, P.C., G.C., V.O., K.C.B., K.C.M.G., Physician to His Majesty the King, and President of the Royal College of Physicians of London, and Sir Henry Wellcome, LL.D., F.S.A., founder of the Wellcome Research Institution, were elected Honorary Fellows of the Royal College of Surgeons. This is one of the most exclusive scientific bodies in England, and the bestowal of this honor on Sir Henry Wellcome is very exceptional in that aside from members of the Royal Family, Sir Henry is the second person not holding a medical degree upon whom this rare distinction has been conferred, the first and only other recipient being the famous Field Marshall, Lord Roberts, of Kandahar.

Sir Henry Wellcome is of American birth and is well known for his world-wide scientific work and extensive pioneer researches in connection with tropical diseases.

The Annual Report of St. Elizabeth's Hospital,

Richmond, Va., for 1931 has just appeared. It shows 1,473 patients during the year 1931 in comparison with 1,302 patients in 1930. There were twenty-one deaths among the operative cases, three among the surgical non-operative cases, five among the urological cases, and thirteen among the medical cases, making the total number of deaths forty-two, and the mortality rate for all deaths 2.85 per cent, as compared with forty-five deaths in 1930 and a mortality rate of 3.46 per cent. The mortality rate for operative surgical patients for 1931 was 2.66 per cent as compared with 4.09 per cent for 1930.

Appended to the report and constituting an interesting feature of it is a synopsis of all deaths, including remarks upon the cases and a brief report of the necropsies. Seventeen necropsies were done (40.47 per cent) and of this number 66.23 per cent were upon surgical patients.

There were 1,158 anesthesias during 1931, of which there were eighty spinal, 429 local, fifty-eight straight ether, 229 straight ethylene, 303 ethylene combined with ether, local or avertin; and 286 operations in which avertin was used.

Dr. Alpheus H. Wood,

After a time at Catawba Sanatorium, Va., has returned to his home in Emporia, Va., where he will recuperate for a while, following a recent minor operation.

A True Auxiliary.

The Woman's Auxiliary to the Richmond Academy of Medicine is proving an Auxiliary in every sense of the word. In addition to the cooperation given along other lines, they recently requested the privilege of assisting the Academy of Medicine in furnishing two lounge rooms in their new Library building, now under construction, and to be opened this Fall. This offer was accepted by the doctors with thanks and the ladies will now make this work their main objective.

Child Marriages in New York.

Thirty-three girls only 14 years of age and 197 others of 15 years were married in New York State in 1930, according to a report recently issued by the New York State Department of Health. The youngest of the bridegrooms was 16, while forty-five others were under 20. The oldest bridegroom was 51 years of age. It seems to be commonly believed that most child marriages occur among the foreign population, but that is not true of this group. Only ten of the brides were of foreign birth, fifty-five of foreign parentage, and twelve of mixed parentage, so that only a third of them were not native born of native parentage. A

larger number of the husbands—forty-seven—were of foreign birth, but the total who were not native born of native parentage was considerably less than half.

Scheduled Meeting.

The regular scientific monthly meeting of the Faculty and Staff of the Medical College of Virginia will be held Thursday, May 19, 1932, at 8:15 P. M. in the auditorium of Cabaniss Hall.

The program will be as follows:

1. "Stab Wound of the Superior Vena Cava": Case Report—Dr. B. W. Wilkinson.
2. "A Report of Ten Cases of Mèniére's Disease Treated by Intracranial Section of the Auditory Nerve"—Dr. C. C. Coleman.
3. "The Use of Nupercaine in Exodontia with Experimental Toxicity Report."—Dr. R. J. Main and Dr. V. R. Trapozzano.

Philadelphia to Have a New Institute for Research.

According to the *Journal of the A. M. A.*, Philadelphia is to have a new institute for Medical Research. This will be open for work in the Fall and will be under the direction of Dr. Leonard G. Rowntree, now director of clinical investigation at the Mayo Clinic, Rochester, Minn., and also professor of Medicine at the University of Minnesota. It is stated that the Philadelphia Institute for Medical Research will center its activities in the Philadelphia General Hospital and will attempt to foster research through affiliation and collaboration with all medical institutions in that city.

Dr. Athey R. Lutz,

Of the class of '27, Medical College of Virginia, after finishing an eighteen months' fellowship at the Willis C. Campbell Orthopedic Clinic, Memphis, Tenn., has located at 1330 Third Avenue, Huntington, W. Va. He is connected with the staff of the Huntington Orthopedic Hospital and is limiting his practice to orthopedic surgery.

Industrial Health.

Dr. H. U. Stephenson, medical director of the Industrial Commission of Virginia gave a talk on "What Health Means in Efficient Conduct of Operations in Industry," at the April meeting of the Lynchburg Foremen's Club, on the evening of April the 11th. He stressed the fact that employees in industrial plants should be encouraged to realize that a healthy condition, physically and mentally, is a part of their contribution to safety and prevention of lost time and thereby adds to the efficiency which the employer has a right to expect.

Dr. White Honored.

Dr. Joseph A. White, Richmond, Va., was the guest of honor and speaker before a gathering of senior and junior students and members of the faculty of the Medical College of Virginia on the afternoon of April the 19th, this being Dr. White's eighty-fourth birthday anniversary. He was given a hearty reception and presented with flowers. Dr. White, who is a professor emeritus at the College, took as the subject of his address "Ophthalmology During My Lifetime."

Cook County Hospital Summer Clinics.

The regular Summer Clinics given by the Staff of Cook County Hospital under the auspices of the Chicago Medical Society will be held during the weeks of June 6th to June 18th, inclusive. The usual $10.00 registration fee will be charged to cover the expense of organization.

Applicants desiring to enroll for the Post-Graduate Clinics should make application as soon as possible to the Secretary of the Cook County Summer Clinics, care of the Chicago Medical Society, 185 North Wabash Avenue.

Dr. Albert B. Siewers,

Of the class of '18, Medical College of Virginia, spent the Easter vacation with his family in Richmond, Va. Dr. Siewers is assistant professor of Nervous and Mental Diseases in the Syracuse University, Medical School, Syracuse, N. Y., and is also psychiatrist to the Department of Education of Syracuse.

Child Health Day, 1932.

Although President Hoover proclaimed May 1st as Child Health Day, in Virginia this day is celebrated at any time from April to June, whenever the schools close for the session. This year, the slogan is "Support Your Community Child Health Program." The Bureau of Child Welfare of the State Department of Health, Richmond, Va., will be glad to offer suggestions for programs upon request.

Married.

Mr. Pierre Louis D'Halluin Bonte, New York City, and Miss Mary Stuart Harrison, daughter of Dr. and Mrs. I. C. Harrison, of Danville, Va., March 26th.

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Dr. William Edward Fitch,

Recently medical director at French Lick Springs, French Lick, Ind., has located in Burlington, N. C., which is in his native county. He will be engaged in general practice. Dr. Fitch lived for some years in New York City where he served as an instructor in the School of Medicine at Fordham University. He came to Virginia several years ago and was for sometime medical director at Buffalo Lithia Springs, Va.

Dr. Thomas F. Gill,

Richmond, Va., announces his removal to his new home and offices at 2924 Chamberlayne Avenue, this city.

Dr. U. W. Massie,

Of the class of '30, Medical College of Virginia, announces his removal from Bluefield, W. Va., to Montvale, Va. Dr. Massie served his internship at Lewis-Gale Hospital, Roanoke, Va.

The American Association for the Study of Goiter

Announces a very interesting program of hospital and dry clinics, addresses and social features for its annual meeting to be held in Hamilton, Ontario, Canada, June 14th, 15th and 16th. Dr. M. O. Shivers, Colorado Springs, Col., is president, and Dr. J. R. Young, Terre Haute, Ind., secretary.

For Sale—

One office examining chair-table, complete with cushions. Very reasonably priced. Address answers to "No. 346," care this journal. (*Adv.*)

Hourly Nursing Service.

The Private Duty Nurses' Club of Richmond, Va., announces the inauguration of an Hourly Nursing Service, in which its members are subject to call for service in all branches of the work that can be adequately performed in the home, at the following rates: $1.50 for the first hour or less, and 50 cents for each additional hour or fraction thereof.

The Club realizes that due to the present economic situation there is a pressing need for a service of this kind in Richmond, which has heretofore been furnished only by the I. V. N. A. The adoption of a similar movement will render a distinct service to the people who do not care for or cannot afford a full time nurse. It will also help to solve the unemployment situation among members of the Private Duty Nurses' Club.

For information, dial 3-1656. (*Adv.*)

Wanted—

Good location in Virginia, by middle aged doctor. Address "G. S.," care this journal. (*Adv.*)

Obituary Record

Dr. John A. Tipton,

Prominent physician of southwestern Virginia, died at his home in Hillsville, Va., April 23rd, after a long period of ill health. Dr. Tipton graduated in medicine from Bellevue Hospital Medical College in 1879 and had been a member of the Medical Society of Virginia since 1885. His wife and two brothers survive him.

Dr. Thomas J. Stanley

Died April 14th, at his home in Beaver Dam, Va. He was sixty-seven years of age and graduated from the University of Maryland, School of Medicine, in 1889. Dr. Stanley had been a member of the Medical Society of Virginia for twenty-eight years. His wife and two children survive him.

Dr. Charles Bolton Brock

Died suddenly at his home in Richmond, Va., April 11th. He was the son of the late Dr. and Mrs. C. W. P. Brock and was sixty-two years of age. Dr. Brock graduated from the Medical College of Virginia in 1894. A brother survives him.

Dr. Alva Bernard Clark,

Richmond, Va., died March 27th, as the result of a streptococcic infection. He was thirty-four years of age and a native of Bramwell, W. Va. Dr. Clark graduated from the Medical College of Virginia in 1925 and served his internship at Grace Hospital, Richmond. At the time of his death he was one of the instructors in genito-urinary surgery at his alma mater.

Dr. James H. A. Loflan,

Melfa, Va., died February 29th. He was eighty-two years old and a graduate of the College of Physicians and Surgeons, Baltimore, in the class of '76. He was a member of the Accomack Medical Society.

Dr. Julius Sheppard Moore,

Arkadelphia, Ark., died January 27th, from injuries received in an automobile accident. He was fifty-one years of age and graduated from the University of Virginia, School of Medicine in 1909.